SONY

VIDEO CASSETTE RECORDER

SVO-9500MD
SVO-9500MD4

SERVICE MANUAL

(Revised 1)

Teil 1 von 2
Section 1-13(1)

S VHS

SPECIFICATIONS

System

Signal system	NTSC color, EIA standards
Recording system	Rotary 2-head azimuth recording, VHS format
Luminance	FM recording
Color	Converted subcarrier direct recording

Video

Inputs	VIDEO IN (BNC type) x 2 for a bridging connection 1.0 Vp-p $^{+1}_{-0.5}$Vp-p, 75 ohms, unbalanced, sync negative S VIDEO IN (4-pin mini DIN) x 2 for a bridging connection Luminance: 1.0 Vp-p, 75 ohms, unbalanced Color: 0.286 Vp-p, 75 ohms, unbalanced
Outputs	VIDEO OUT (BNC type) x 1 1.0 Vp-p ±0.2 Vp-p, 75 ohms, unbalanced, sync negative S VIDEO OUT (4-pin mini DIN) x 1 Luminance: 1.0 Vp-p, 75 ohms, unbalanced Color: 0.286 Vp-p, 75 ohms, unbalanced
Horizontal resolution	More than 240 TV lines (VHS) More than 400 TV lines (S-VHS)
S/N	More than 45 dB (VHS)
Recording level control	Automatic

Audio

Tracks	4 tracks (hi-fi: 2, normal: 2)
Inputs	AUDIO IN CH-1/L, CH-2/R (phono jack) x 1 each –10 dBs (0 dBs = 0.775 V), 47 kilohms, unbalanced MIC (phone jack) x 1 –60 dBs (0 dBs = 0.775 V), 3 kilohms, unbalanced
Outputs	AUDIO OUT CH-1/L, CH-2/R (phono jack) x 1 each –10 dBs (0 dBs = 0.775 V) (47-kilohm load), unbalanced MONITOR OUT (phono jack) x 1 –5 dBs (0 dBs = 0.775 V) (47-kilohm load), unbalanced
S/N	More than 43 dB (with normal audio at 3% distortion)
Frequency response	50 to 12,000 Hz (with normal audio) 20 to 20,000 Hz (with hi-fi audio)
Dynamic range	More than 90 dB (with hi-fi audio)
Recording level control	Limiter system

Other functions

Search	Possible (still, 5 times normal speed in both forward and reverse directions) With SVRM-100: still or picture search with $^{1}/_{10}$ to 10 times normal speed in both forward and reverse directions

Tape transport

Tape speed	33.35 mm/sec.
Recording and playback time	Approx. 120 minutes (with T-120)
Fast forward and rewind time	Within 2.5 minutes (with T-120)
Usable tape	Standard VHS tapes

General

Power requirements	120 V AC ±10%, 50/60 Hz ±10%, 0.6 A
Power consumption	72 VA
Operating position	Horizontal
Storage temperature	–20°C to +60°C (–4°F to +140°F)
Operating temperature	5°C to 40°C (41°F to 104°F)
Dimensions	270 x 132 x 366 mm (w/h/d) ($10^{3}/_{4}$ x $5^{1}/_{4}$ x $14^{1}/_{2}$ inches) not including projecting parts and controls
Weight	Approx. 10 kg (22 lb 1 oz)
Supplied accessories	AC power cord (1) Operating instructions (1)

Design and specifications are subject to change without notice.

Optional accessories

SVRM-100 Remote control unit (for the front REMOTE connector)
SVAC-100 indicator unit
SVBK-100 33-pin interface board
SVBK-110 34-pin interface board (This board is included in SVO-9500MD4)
SVBK-120 RS-232C interface board

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SECTION 1
GENERAL DISCRIPTION

1-1. FEATURES

High reliability
Two direct reel motors are employed. A material of high hardness is used for the lower drum to prolong service life. In addition, the beltless mechanism gives high reliability.

Built-in chroma noise reducer
The digital chroma noise reducer yields life-like color reproduction. The recorder also has jitter elimination functions for stable pictures on playback.

Hi-fi audio recording
Frequency-modulated hi-fi audio can be recorded on the video track of a tape while simultaneously recording normal audio on the audio tracks. In playback, either normal audio or hi-fi audio can be selected.

Four-channel audio
Recording and playback of two channels each of normal audio and hi-fi audio, four channels in total, are possible.

Instantaneous recording from long-pause mode
Recording can be instantly resumed even when the recorder is in long-pause mode, so a chance to start recording will not be missed.

Automatic control of video recording level
The automatic gain control (AGC) circuit maintains the proper video level assuring optimum video recording.

Programmed operation
Programmed operation allows you to locate specified points on a tape in search mode and also to automatically repeat a desired portion.

Loop-through output
A video input signal connected to one of the VIDEO IN connectors is directly output from the other VIDEO IN connector. Pictures are displayed on a monitor connected to it, therefore, with good resolution even in modes other than playback, and you can record pictures while viewing them on the monitor.

LED time counter
The time counter reads out the CTL signals recorded on a tape and indicates the tape running time in hours, minutes and seconds. This is useful for checking recording time as well.

Search function
Search in the forward and reverse directions can be performed at 5 times normal speed. When the search dial of an SVRM-100 remote control unit (optional) is used, the picture can be viewed on playback at various speeds from $^1/_{10}$ times to 10 times normal speed as well as in still mode.

Index search
When the SVRM-100 remote control unit (optional) is used, desired points on a tape can be easily located by marking an index signal at these points in advance.

Blank search
The blank search function automatically finds an unrecorded portion on a tape. It may be helpful in locating the starting point of recording.

Frame memory and freeze functions
Pictures can be stored frame by frame in memory, using the frame memory function, and a noiseless still picture can be obtained with the freeze function. For a still picture, either a frame or a field picture can be selected with the touch of a button.

Menu operation function
The menu operation function permits various operational requirements for the recorder to be easily designated, using the buttons on the front panel.

Automatic tape eject at the end
When recording reaches the end of a tape, the recorder automatically ejects the tape. This avoids inadvertent overrecording which erases valuable data. This automatic tape eject can be inhibited through a menu operation.

Tape remaining time indication
A rough estimate of the amount of recording on a tape is displayed.
The remaining time of a tape can also be checked on the SVAC-100 indicator unit (optional).

The difference of SVO-9500MD4 from SVO-9500MD

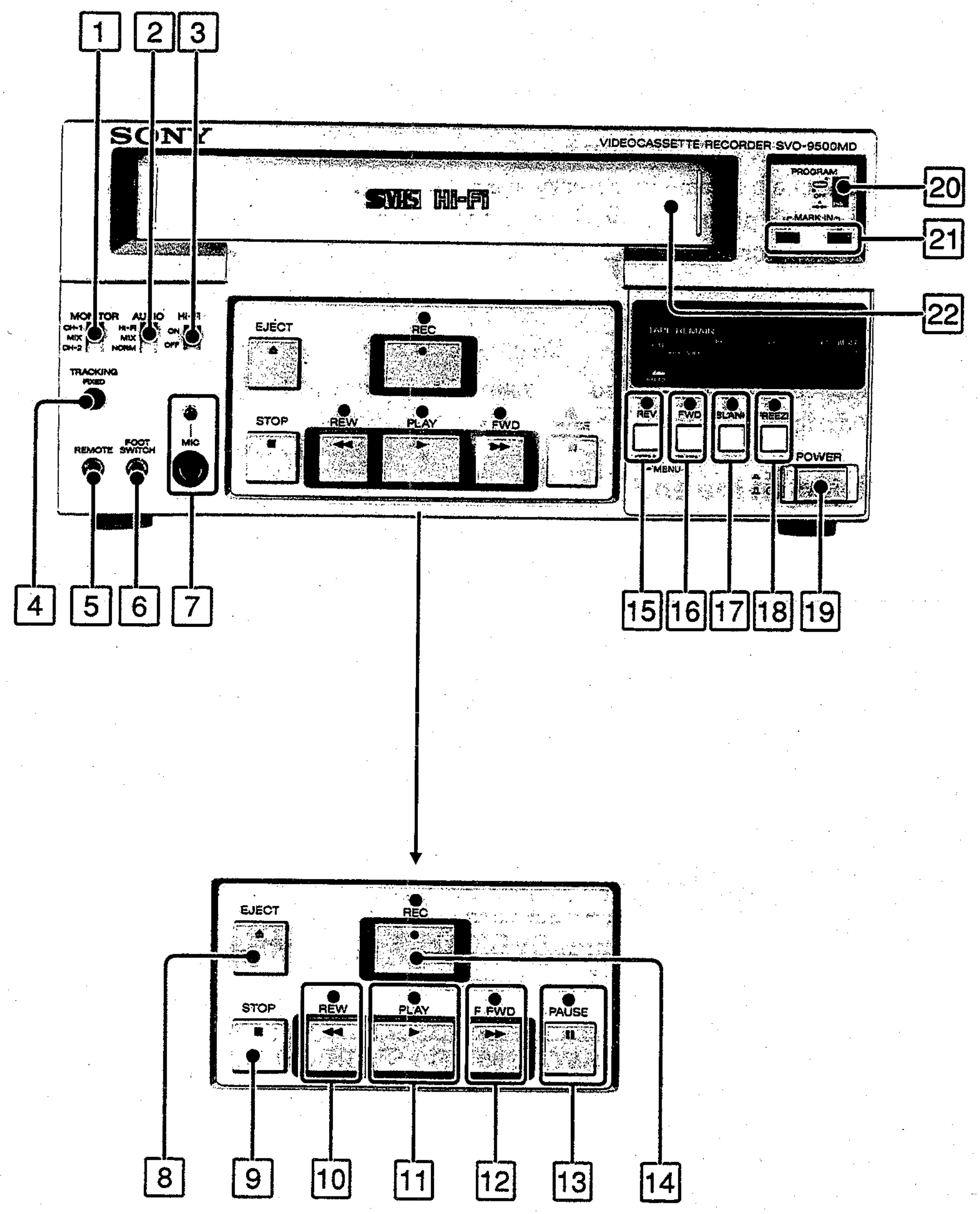
SVO-9500MD4 is a VTR which equips SVBK-110 (34-pin interface board ; Optional accesory of SVO-9500MD) in standard.

SVO-9500MD4=SVO-9500MD+SVBK-110

Therefore, for detail on the corresponding part to SVBK-110 of SVO-9500MD4, refer to the SVBK-110 service manual (Part No. 9-977-490-0X).

1-2. PARTS IDENTIFICATION

Front Panel



1 MONITOR switch

Selects the audio signal to be output from the MONITOR OUT connector on the rear panel. This switch is enabled for the signals selected with the AUDIO switch 2.

CH-1	Channel-1 audio
MIX	Both channel-1 and -2 audio
CH-2	Channel-2 audio

- For details, see "To Monitor the Sound Being Recorded" (page 12).

2 AUDIO switch

Selects the signal to be output from the AUDIO OUT CH-1/L and CH-2/R connectors on the rear panel.

Connector	AUDIO OUT CH-1/L	AUDIO OUT CH-2/R
Hi-Fi	Hi-fi audio channel 1	Hi-fi audio channel 2
MIX	Both hi-fi audio channels 1 and 2	Both normal audio channels 1 and 2
NORM	Normal audio channel 1	Normal audio channel 2

3 Hi-Fi switch

Determines whether to record hi-fi audio.

- Normal audio is constantly recorded regardless of this switch setting.

ON	Record hi-fi audio.
OFF	Do not record hi-fi audio.

4 TRACKING control

Normally set the control at the center FIXED position. Should noise, snow or streaks appear in a playback picture recorded on another machine, turn this control so that the best possible picture is obtained.
When the recorder is in slow mode, slow-tracking control can be performed. If noise, slow or streaks appear in pause mode, or in step-slow playback using an external controller connected via the SVRM-100 remote control unit (optional) or an interface board (optional), turn this control for the optimum picture. When resuming normal playback, return this control to the original position.

- Do not move the control from the center FIXED position while recording.

5 REMOTE connector (stereo mini jack)

Accepts an optional SVRM-100 remote control unit. Recording, playback, fast forward, rewind, search (with 5-times normal speed) using the search dial and index operations can be remotely controlled.

6 FOOT SWITCH connector (stereo mini jack)

Accepts a commercially available foot switch. Recording start/stop operations can be remotely controlled.

7 MIC (microphone) connector (phone jack) and indicator

Connect a microphone to record an external audio, which will be recorded on normal audio channel 1. During recording from the microphone, the indicator above the MIC connector blinks according to the sound level.

8 EJECT ⏏ button

Press to eject a video cassette.

9 STOP ■ button

Press to stop the operation of the unit.

10 REW ◀◀ (rewind) button/lamp

Press to rewind the tape.

11 PLAY ▶ (playback) button/lamp

Press to play the tape back. Pressing this button while pressing the REC ● button 14 sets the unit in record mode.

12 F FWD ▶▶ (fast forward) button/lamp

Press to advance the tape rapidly.

13 PAUSE ❚❚ button/lamp

Press to stop the tape momentarily.

14 REC ● (recording) button/lamp

For recording, press the PLAY ▶ button 11 while pressing this button.

15 REV (reverse) SEARCH/ITEM button/lamp

Press for a search operation in the reverse direction.
In menu operations (with the CTL/MENU switch 25 set to MENU), press this button to select the item to be set.

16 FWD (forward) SEARCH/DATA button/lamp

Press for a search operation in the forward direction.
In menu operations (with the CTL/MENU switch 25 set to MENU), press this button to select the datum to be set for the selected item.

17 BLANK SEARCH button/lamp

Press to search for a unrecorded portion on a tape.

18 FREEZE button/lamp

Press to display a freeze picture on the monitor screen. Each time the button is pressed, frame-freeze picture, first-field freeze picture and second-field freeze picture are selected in the sequence.

19 POWER switch

20 PROGRAM switch

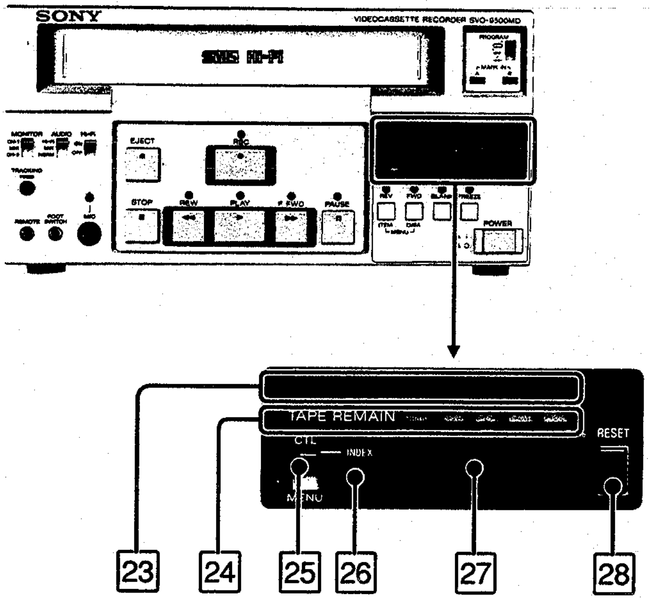
B⟲A	For repeatedly playing a particular portion or checking the points memorized on the MARK IN A and B buttons.
OFF	For normal operation without using any programmed operation. (When the unit is to be controlled from a remote control unit connected to the REMOTE connector, be sure to set the switch to OFF.) Or for memorizing points on the MARK IN A and B buttons for programmed operation.
→A|←	For locating a point memorized on the MARK IN A button. Or for memorizing points on the MARK IN A and B buttons for programmed operation. • If no point has been memorized, the tape stops at the point indicated by "0:00:00" on the time counter.

21 MARK IN A and B buttons

Press to memorize the time counter value at that time. You can memorize only one point on each button. If the button is pressed several times, only the last point will be memorized.

22 Cassette compartment

Front Panel (continued)



23 Indicator block

📼	Lights when a cassette is set in the unit.
AUTO OFF	Lights when the power is applied and there is moisture inside the unit. While this indicator is lit, no cassette can be loaded in the unit.
S-VHS	Lights when recording or playing in S-VHS.
MARK	Blinks when marking an index signal using the SVRM-100 remote control unit.
ERASE	Blinks when erasing an index signal using the SVRM-100 remote control unit.

24 TAPE REMAIN indicator

Shows the amount of recording on a tape in percent.
While measuring the tape remain, the indicator alternately shows the following two indications.

A : TAPE REMAIN ■ □ ■ □ ■
↕
B : TAPE REMAIN □ ■ □ ■ □

Note

The remaining tape cannot be correctly indicated, depending on the length of the tape being used.

25 CTL/MENU switch

Selects data to be displayed on the time counter block 27.

CTL	To count CTL signals on the tape and display the tape transport time in hours, minutes and seconds.
MENU	To go to menu mode and display the items and the respective settings. Other operations cannot be performed in menu mode.

26 INDEX lamp

Lights during index scan and index search operations.

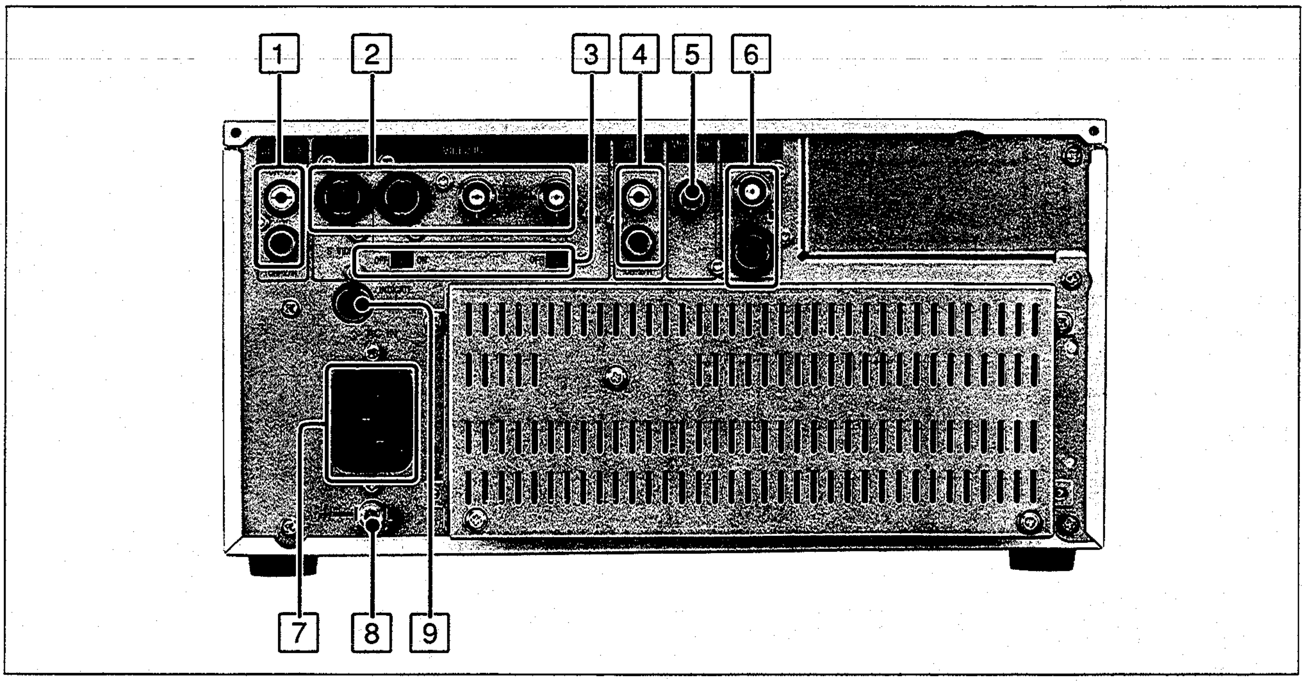
27 Time counter block

Displays data selected with the CTL/MENU switch 25.

28 RESET button

With the CTL/MENU switch 25 set to CTL and the tape transport time of the tape displayed on the time counter block 27, the indication will be set to "0:00:00" when this button is pressed.

Rear Panel



1 AUDIO IN (input) CH-1/L (channel 1/left) and CH-2/R (channel 2/right) connectors (phono jacks)

2 VIDEO IN (input) connectors (S type/BNC type)

The left two connectors are S connectors and the right two connectors are BNC connectors for composite signals.
Bridge connection is also allowed. **For the bridge connection, set the respective 75-ohm termination switches 3 for the video input of the units other than the last unit of the connection to OFF.**

3 75-ohm termination switches for video input

Use to terminate the video signal supplied to the VIDEO IN connectors. The left switch is for the S connectors and the right switch is for the BNC-type connectors.

ON	When no bridge connection is required. Or, when the unit is used as the last unit of a bridge connection.
OFF	For a bridge connection (using one of the VIDEO IN connectors for loop-through output).

4 AUDIO OUT (output) CH-1/L (channel 1/left) and CH-2/R (channel 2/right) connectors (phono jacks)

The audio signal selected at the AUDIO switch on the front panel is supplied here.

5 MONITOR OUT (audio monitor output) connector (phono jack)

The audio signal selected at the MONITOR switch on the front panel is supplied here.

6 VIDEO OUT (output) connectors (BNC type/S type)

The upper connector is a BNC-type connector for normal composite signals and the lower connector is an S connector.

7 AC IN (input) connector

Connect to an AC power outlet using the supplied power cord.

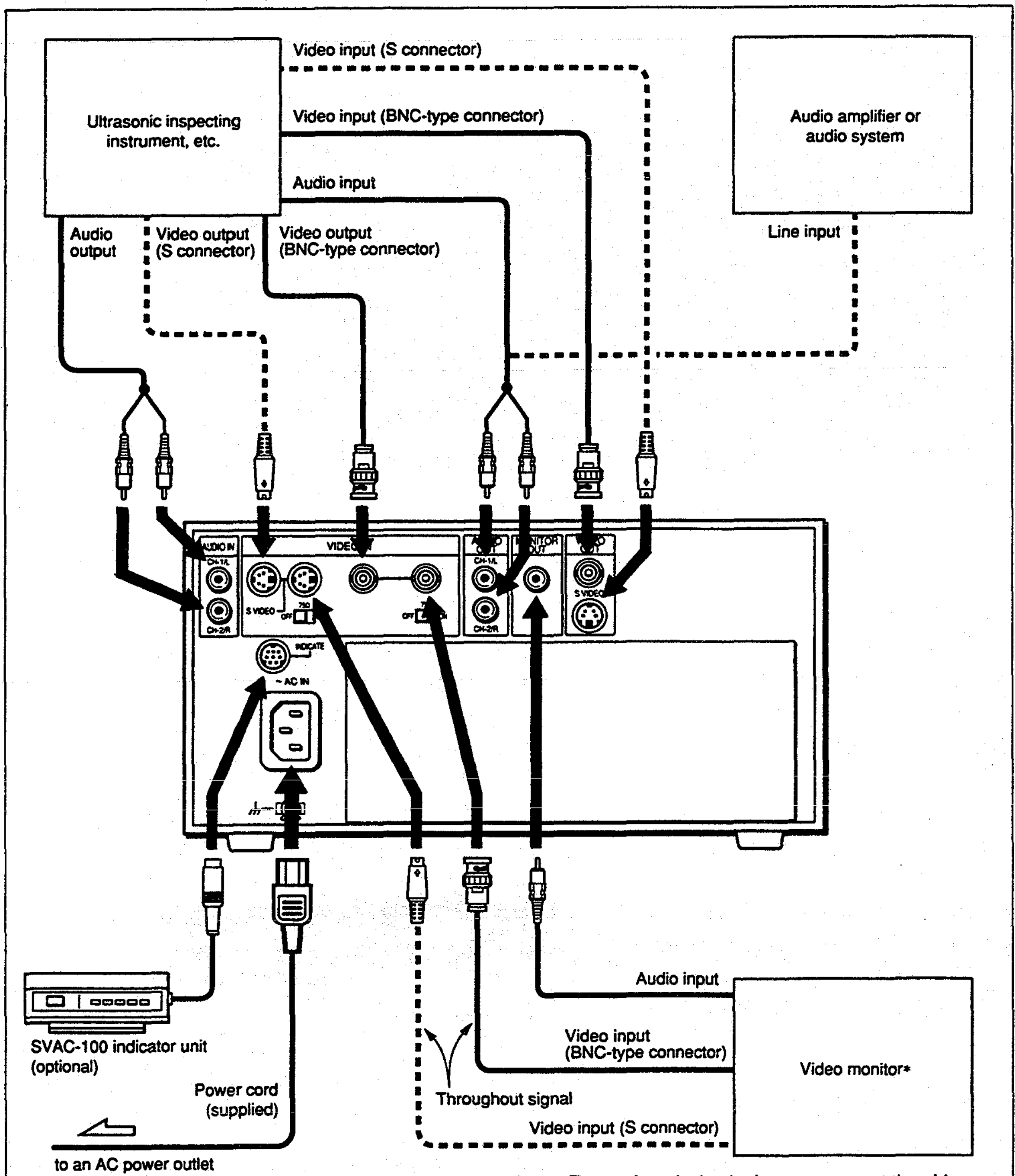
8 Ground terminal

When the recorder cabinet is to be grounded, connect a ground wire here.

9 INDICATE connector (8-pin)

Accepts the SVAC-100 indicator unit (optional).

1-3. CONNECTIONS


Video input (S connector)
Ultrasonic inspecting instrument, etc.
Video input (BNC-type connector)
Audio input
Audio amplifier or audio system
Audio output
Video output (S connector)
Video output (BNC-type connector)
Line input
AUDIO IN
CH-1/L
CH-2/R
VIDEO
S VIDEO
OFF
75Ω
CH-1/L
CH-2/R
MONITOR OUT
S VIDEO
INDICATE
~AC IN
Audio input
SVAC-100 indicator unit (optional)
Video input (BNC-type connector)
Video monitor*
Power cord (supplied)
Throughout signal
Video input (S connector)
to an AC power outlet

*To monitor playback pictures, connect the video monitor to the VIDEO OUT connector.

Notes

- When a microphone is connected in normal recording, the signal connected to the AUDIO IN CH-1/L connector on the rear is automatically switched to the signal from the microphone. In hi-fi recording, the signal from the AUDIO IN CH-1/L connector is recorded.
- Set the 75-ohm termination switches according to the description on the previous page.

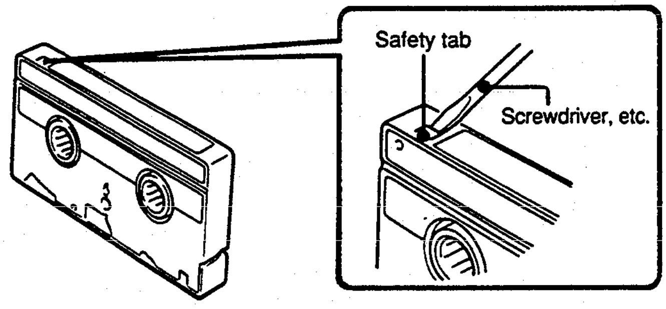
Notes on Cassettes

Notes on cassette insertion

- Be sure to insert the cassette straight into the entrance of the compartment.
- Check the cassette sides and be sure to insert the cassette correctly **with the label side up.**
- The labels on the cassette should be firmly attached. If they peel off an inserted cassette, you might not be able to remove the cassette.

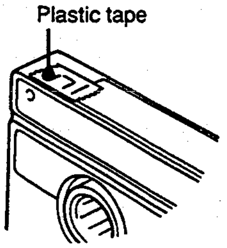
About the safety tab

When re-recording on a recorded tape, the pre-recorded material will be automatically erased. To avoid unintentional erasure of previously recorded video sources, break off the safety tab on the cassette. With the tab removed, recording mode cannot be activated.

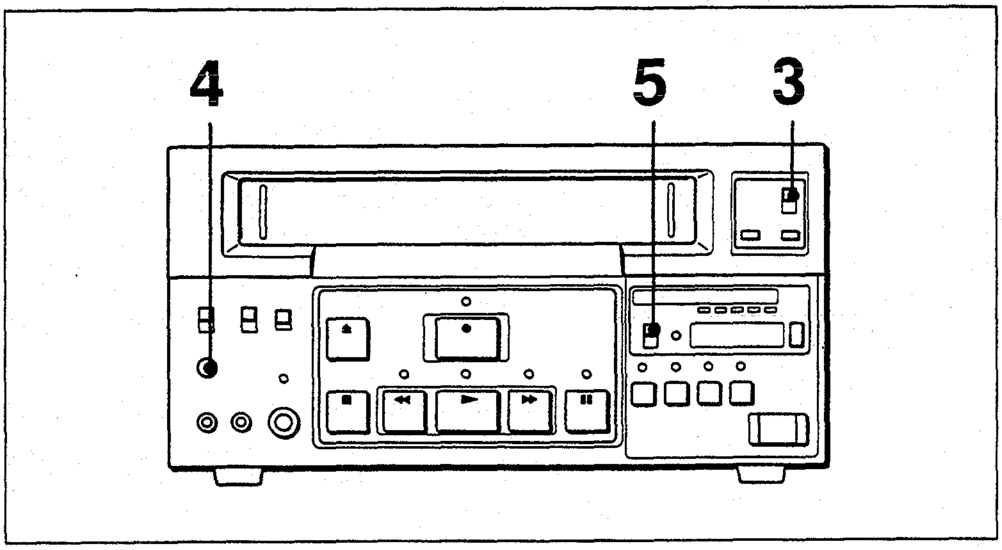


To re-record on the cassette

Cover the slot where the safety tab used to be located with plastic tape.



Preparations



1 Perform the necessary connections.

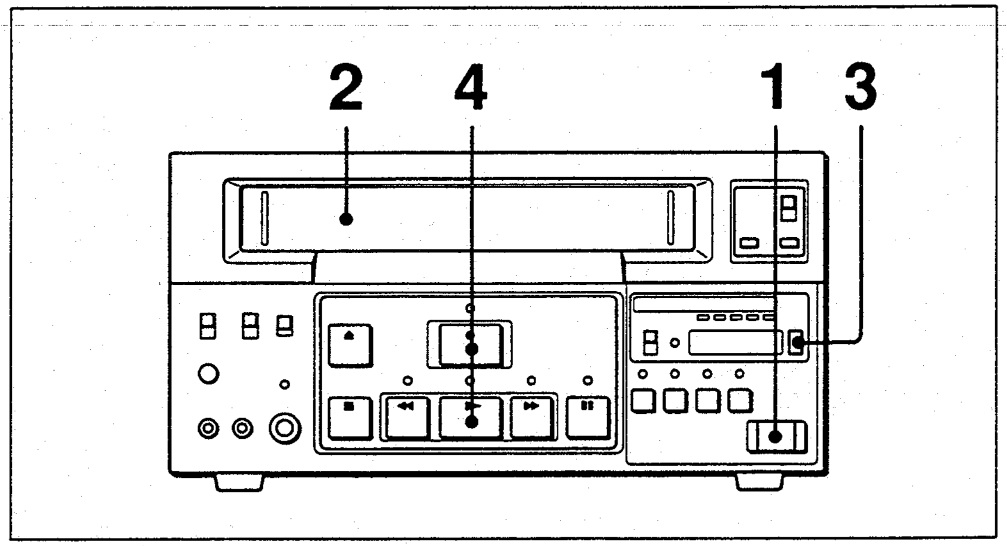
2 Turn on the power of the video monitor.

3 Set the PROGRAM switch on the recorder to OFF.

4 Set the TRACKING control to FIXED.

5 Set the CTL/MENU switch to CTL.

Operation



1 Press the POWER switch to turn on the power of the recorder.

2 Insert a cassette.

3 Press the RESET button.
The time counter shows "0:00:00."

4 Press the PLAY ▶ button while pressing the REC ● button.
Recording begins.

Regarding a cassette
Be sure to check the tab on the bottom of the cassette is in place before inserting it in the recorder. **Recording mode cannot be activated with a cassette without the tab.**

Audio recording

When an audio signal is connected to the AUDIO IN CH-1/L and CH-2/R connectors on the rear panel, it is recorded along with video. Set the Hi-Fi switch on the front panel to determine whether to record normal audio only or to record hi-fi audio as well.

Audio to be recorded	Hi-Fi switch setting
To record normal audio only	OFF
To record both normal audio and hi-fi audio	ON

Recording with a microphone
By connecting a microphone to the MIC connector on the front panel, necessary information can be recorded as voice memos. The voice is recorded on the track of normal audio channel 1. The recording level is automatically adjusted to the optimum value. During recording with a microphone, the indicator above the MIC connector lights in response to voice input.

To stop the tape momentarily

Press the PAUSE ⏸ button. To resume recording, press the PAUSE ⏸ button again. (This operation can be controlled from a distance when a remote control unit or a foot switch has been connected.)

Long pause mode

If the pause mode continues for more than about 5 minutes, the tape around the head drum automatically slackens to protect the video head and the tape. This is called "long pause mode." To release the long pause mode, press the PAUSE ⏸ button. Recording is immediately resumed.

When recording is finished

Press the STOP ■ button.

If the recording is done to the end of the tape

Recording stops and the cassette is automatically ejected.
This automatic eject can be inhibited through a menu operation. For details, see "Menu Operations" (page 28).

If the tape does not run by pressing any of the operation buttons

1. Press the EJECT ⏏ button to take out the cassette.
2. Turn the reel in the direction of the arrow on the bottom of the cassette until the leader tape is completely taken up.
3. Insert the cassette again.
   If the cassette cannot be ejected, or if the tape transport buttons are not effective after above operation, consult your nearest Sony service facility.

To Find the Starting Point of Recording—Blank Search

The beginning of the unrecorded portion on a tape on which several images have been already recorded can be easily located, so that you may continue recording from that point. Insert the cassette in the compartment and press the BLANK button. The recorder operates as follows.

1 Search mode in the forward direction is activated and the BLANK lamp lights.

2 When a blank portion cannot be located within about 10 seconds, fast forward mode is activated to continue searching for the blank portion.

3 When a blank portion is detected, search mode in the reverse direction is activated to locate the beginning of the blank portion.

4 When the beginning of the blank portion is located, slow search mode in the forward direction is activated and then the tape stops at the beginning of the blank portion in pause mode. The BLANK lamp lights.
If the beginning of the blank portion cannot be located, the tape rewinds to the beginning and blank search mode is automatically released.

To cancel blank search mode
Blank search mode is automatically canceled when the search reaches the end of tape. To cancel the mode on the middle of a tape, press any of the tape transport buttons.

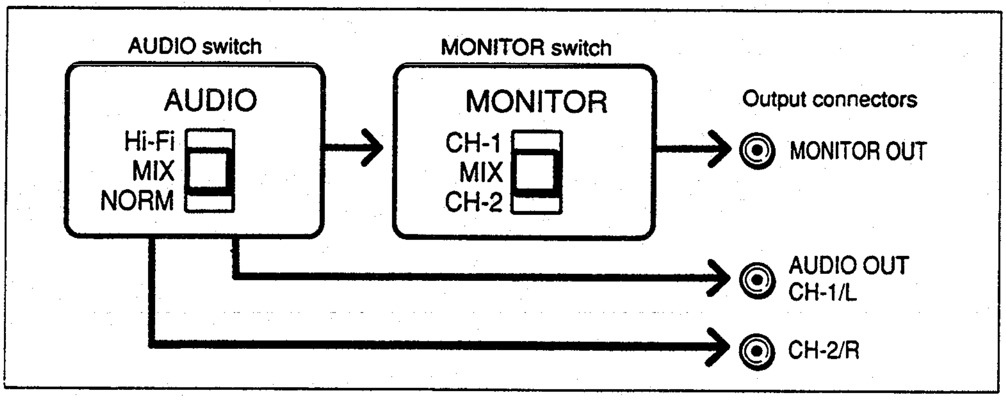
To View the Picture Being Recorded

While recording, the picture being recorded can be seen on a monitor screen. Connect a video monitor to one of the VIDEO IN connectors on the rear panel. The loop-through output function provides high-resolution pictures.

Automatic recording level adjustment
The built-in AGC circuit automatically adjusts the video recording level to the optimum value.

To Monitor the Sound Being Recorded

Select the sound to be monitored with the AUDIO switch and the MONITOR switch.


AUDIO switch
MONITOR switch
AUDIO
Hi-Fi
MIX
NORM
MONITOR
CH-1
MIX
CH-2
Output connectors
MONITOR OUT
AUDIO OUT
CH-1/L
CH-2/R

AUDIO switch settings

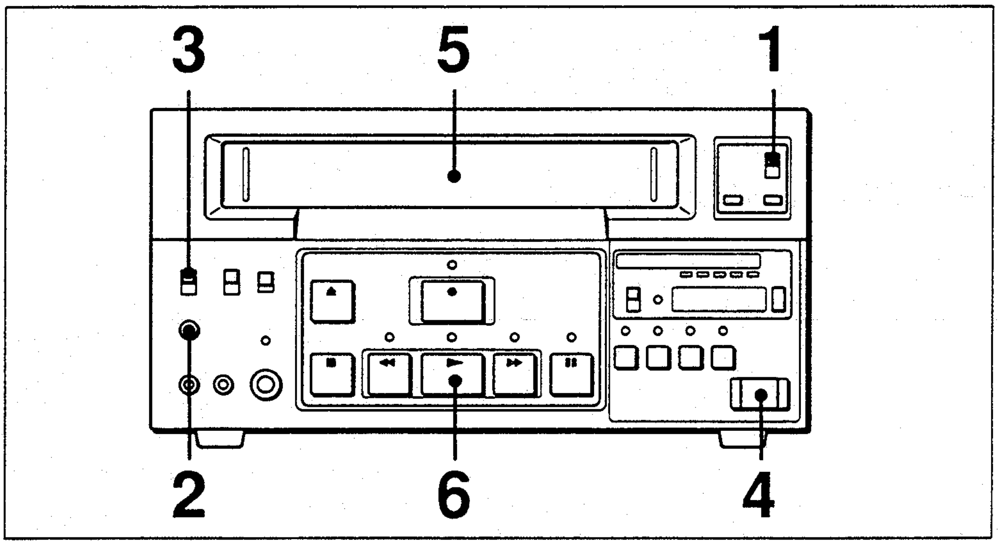
Sound to be monitored	Switch settings
To monitor hi-fi audio channel 1 and channel 2 individually	Hi-Fi
To monitor normal channel 1 and channel 2 individually	NORM
To monitor channels 1 and 2 simultaneously. (Hi-fi channels 1 and 2 are provided from the CH-1/L connector and normal audio channels 1 and 2 are provided from the CH-2/R connector.)	MIX

MONITOR switch settings

Channel to be monitored	Switch setting
Channel 1 only	CH-1
Both channels 1 and 2	MIX
Channel 2 only	CH-2

- The MONITOR switch has no effect on the audio output from the AUDIO OUT CH-1/L and CH-2/R connectors.

Operation



1 Set the PROGRAM switch of the recorder to OFF.

2 Set the TRACKING control to FIXED.

3 Set the MONITOR switch to:

MIX	for normal monitoring
CH-1	when monitoring only the sound of channel 1.
CH-2	when monitoring only the sound of channel 2.

- This switch has no effect on outputs to the AUDIO OUT CH-1/L and CH-2/R connectors.

4 Turn on the power.

5 Insert the cassette to be played back.

6 Press the PLAY ▶ button.
Playback begins.

To stop playback
Press the STOP ■ button.

To stop the tape momentarily
Press the PAUSE ‖ button. The tape stops and a still picture appears on the monitor screen.
To resume playback, press the PAUSE ‖ button again or the PLAY ▶ button.

- **If pause mode continues for about 5 minutes**, the recorder automatically enters long pause mode. The still freeze function permits a stable still picture to be seen even in long pause mode.
  Press the PAUSE ‖ button to release long pause mode.

When the tape is played back to the end
It automatically rewinds to the beginning and then stops.

If snow or streaks may appears on the picture
Slowly turn the TRACKING control clockwise or counterclockwise until the best possible picture is obtained.

- When the playback of this particular tape is finished, be sure to return the TRACKING control to the FIXED position.

To obtain a noiseless still picture

Press the FREEZE button during playback. You will get a clear still picture without noise on the screen.
One push of the FREEZE button shows a frame-freeze picture, the second push of the button shows a first-field picture and the next push shows a third-field picture. Thus, each time the button is pressed, these three freeze pictures are cyclically displayed.
The picture to be displayed at the first push of the FREEZE button can be selected from frame freeze picture and field-freeze picture, as desired. For details, see "Menu Operations" (page 28).

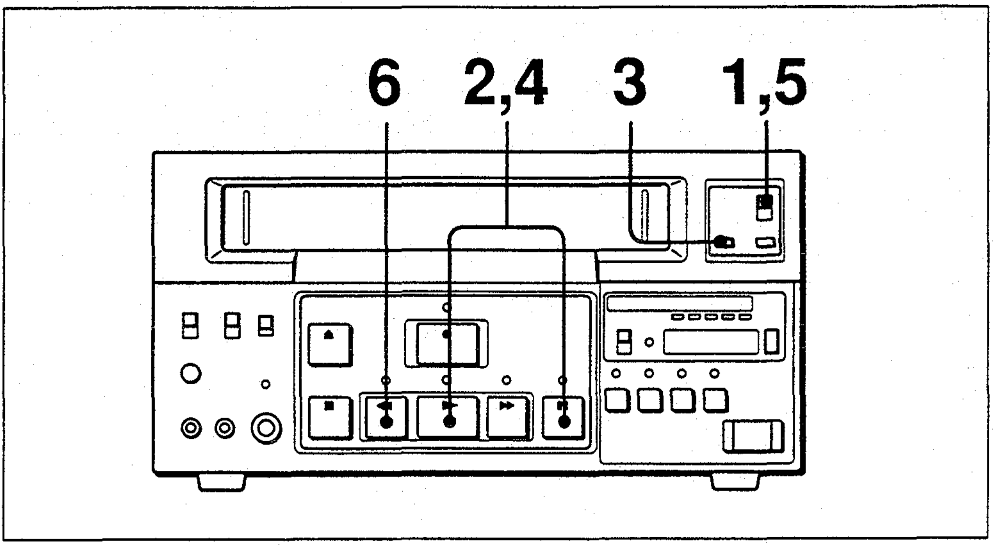
To cancel freeze mode
Hit any of the tape transport buttons other than the FREEZE button.

Freeze picture during search or pause
When the FREEZE button is pressed during search or pause, the tape runs in the reverse direction from that point for about 2 seconds and playback mode is activated. Playback continues to the point where the button was pressed and then the freeze picture for that point is displayed. In both cases, the tape stops at the point immediately after the freeze picture.

Programmed Operation

Using the MARK IN A and B buttons and the PROGRAM switch, you can quickly locate a desired point or repeatedly play a particular portion.

To quickly return to a desired point



1 Set the PROGRAM switch to OFF.

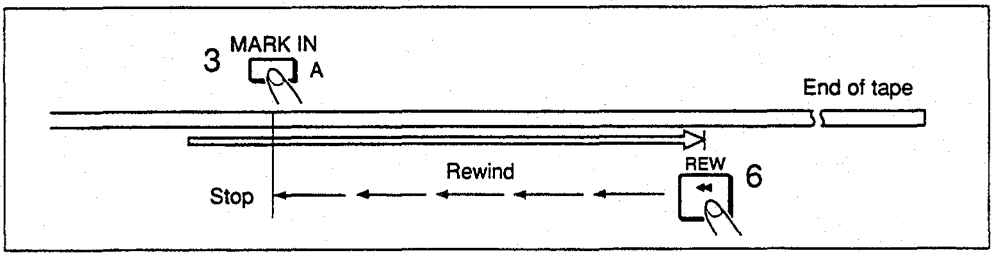
2 Play the tape and stop it at the desired point momentarily.

3 Press the MARK IN A button.
The desired point will be memorized.

4 Press the PLAY ▶ button or the PAUSE ❚❚ button to resume the playback.

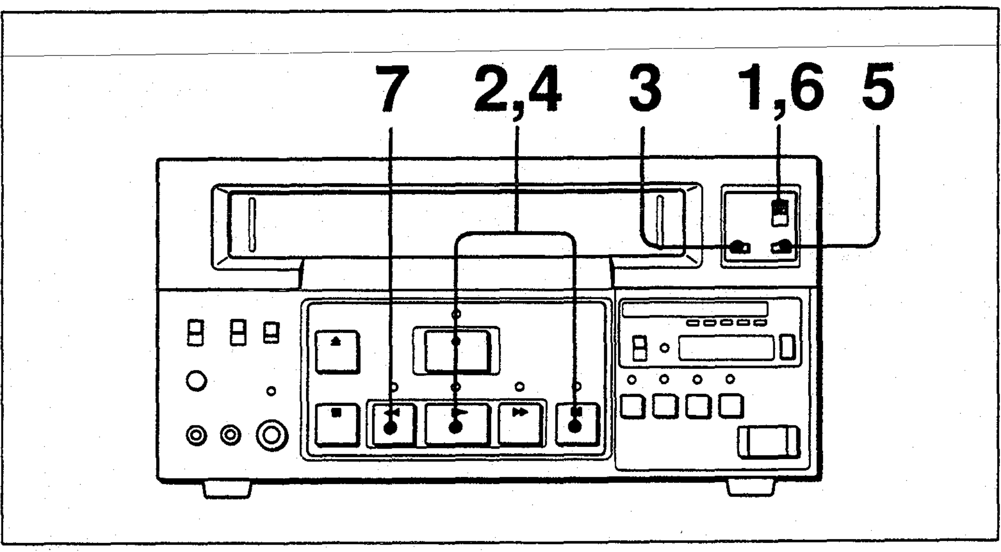
5 Set the PROGRAM button to $\overset{A}{\rightarrow|\leftarrow}$.

6 Press the REW ◀◀ button.
The tape will stop at the point memorized on the MARK IN A button.



]

To repeat a desired portion



1 Set the PROGRAM switch to OFF.

2 Play the tape and stop it momentarily at the point from which the playback is to be started.

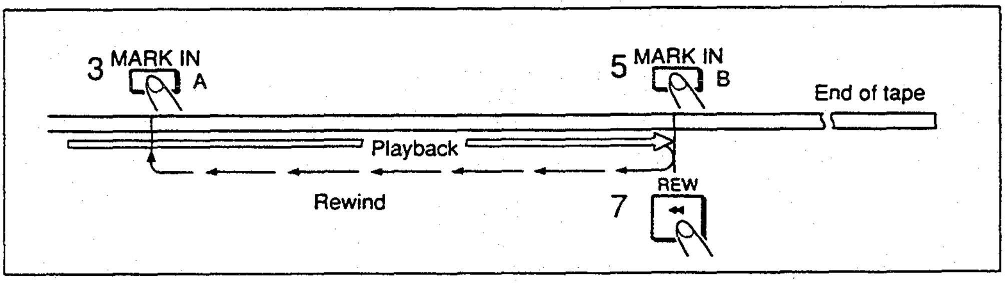
3 Press the MARK IN A button.

4 Search for a point where the playback is to be stopped and stop the tape momentarily at that point.

5 Press the MARK IN B button.

6 Set the PROGRAM switch to $_{B}\circlearrowleft^{A}$.

7 Press the REW ◀◀ button.
The portion between the points memorized on the MARK IN A and B buttons is repeatedly played back.


3 MARK IN A
5 MARK IN B
End of tape
Playback
Rewind
REW
7

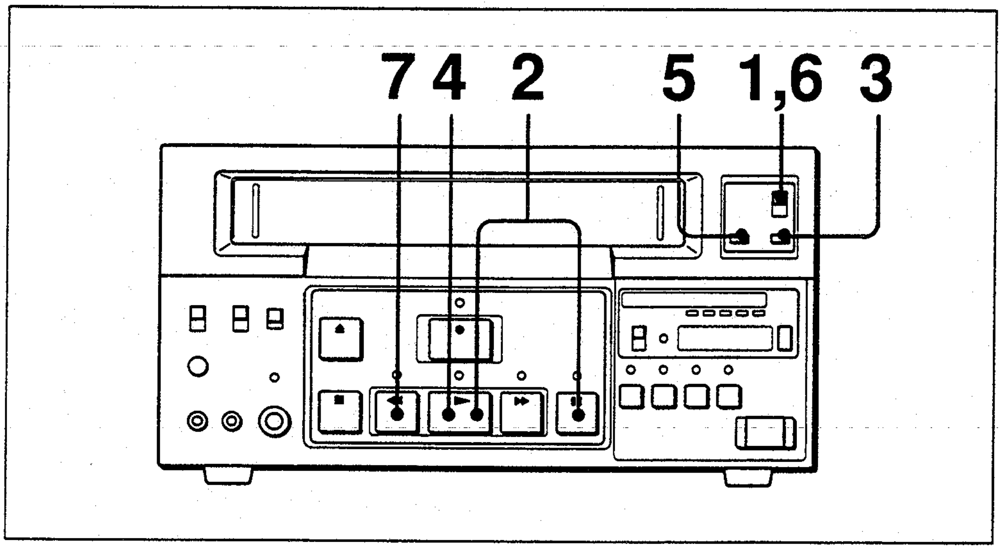
To check the memorized points

1. Press the STOP ■ button to stop the tape.
2. Set the PROGRAM switch to $_{B}$↻^{A} .
3. Press the MARK IN A or B button.
   The memory on that button will be displayed on the time counter while pressing the button.

To display the time between two particular points designated for a repeat playback

1. Stop the tape with the STOP ■ button.
2. Set the PROGRAM switch to $_{B}$↻^{A} .
3. Press the MARK IN A and B buttons simultaneously.
   While the buttons are pressed, the time between the designated points will be displayed on the time counter.

To repeat between the beginning of a tape and a particular point



1 Set the PROGRAM switch to OFF.

2 Search for a point where the playback is to be stopped and stop the tape momentarily at that point.

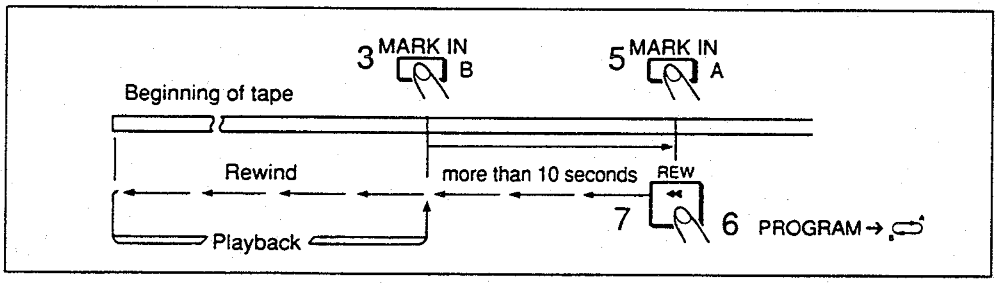
3 Press the MARK IN B button.

4 Press the PLAY ▶ button. After playing the tape for more than 10 seconds, stop the tape momentarily.

5 Press the MARK IN A button.*

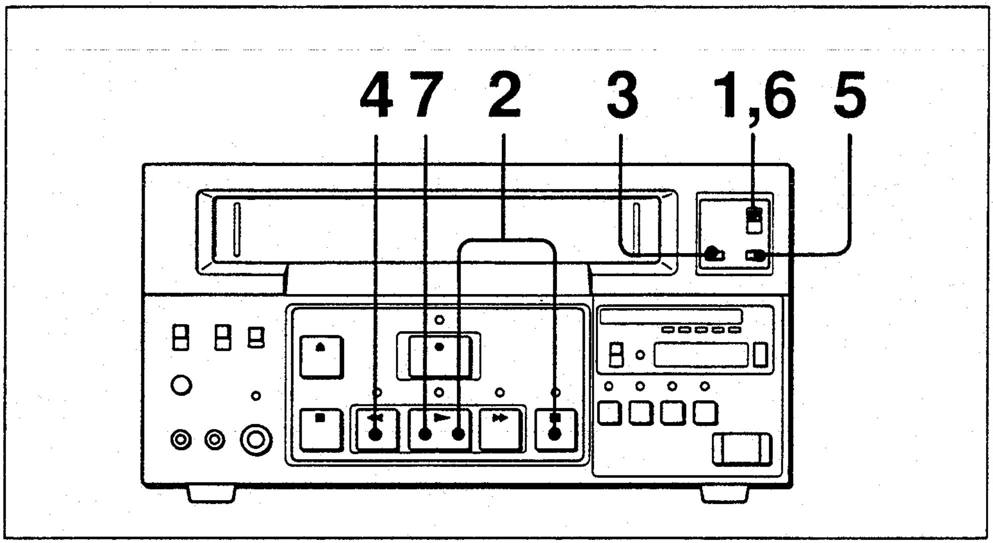
6 Set the PROGRAM switch to $_{B}\circlearrowleft^{A}$.

7 Press the REW ◀◀ button.
The tape rewinds to the beginning and the unit enters the playback mode. Then, the designated portion to the point memorized on the MARK IN B button is repeatedly played back.


3 MARK IN B
5 MARK IN A
Beginning of tape
Rewind
more than 10 seconds
REW
Playback
7
6 PROGRAM→

***Why must the MARK IN A button be pressed?**
If a point before the one memorized on the MARK IN B button has been memorized on the MARK IN A button, the desired portion cannot be repeatedly played back. To avoid this, a point after the desired end point must be memorized on The MARK IN A button.

To repeat between a particular point and the end of the tape



1 Set the PROGRAM switch to OFF.

2 Search for a point where the playback is to begin and stop the tape momentarily at that point.

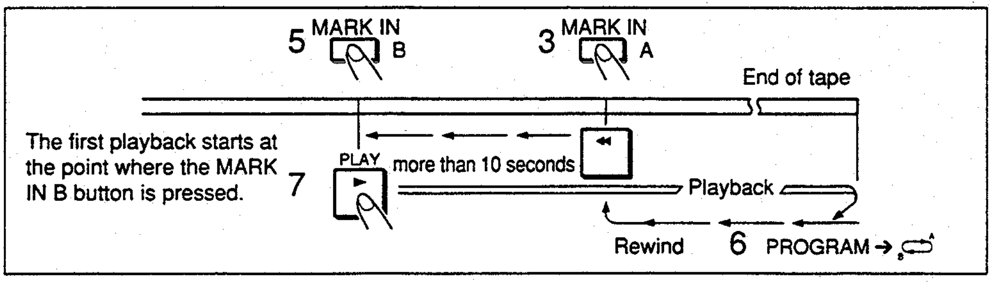
3 Press the MARK IN A button.

4 Press the REW ◀◀ button to rewind the tape for more than 10 seconds, then stop the tape momentarily.

5 Press the MARK IN B button.*

6 Set the PROGRAM switch to ${}_{B}\circlearrowleft^{A}$.

7 Press the PLAY ▶ button.
The tape is played back to the end and rewinds to the point memorized on the MARK IN A button, and the playback of the portion from that point to the end of the tape is repeated.


5 MARK IN B
3 MARK IN A
End of tape
The first playback starts at the point where the MARK IN B button is pressed.
7
PLAY
more than 10 seconds
Playback
Rewind
6 PROGRAM →

***Why must the MARK IN B button be pressed?**
If a point after the one memorized on the MARK IN A button has been memorized on the MARK IN B button, the desired portion cannot be repeatedly played back. To avoid this, a point before the desired point must be memorized on the MARK IN B button.

To stop the repeat playback
Press the STOP ■ button.

When the programmed operation is finished
Be sure to return the PROGRAM switch to OFF.

MARK IN A and B buttons
The MARK IN A and B buttons can also be used during playback.

Memory backup function
The last memories on the MARK IN and B buttons and the last time counter display will be maintained even if the power is turned off. If you perform a memorizing operation and turn off the power within 15 seconds after the power was turned on, the data in memory will not be retained.

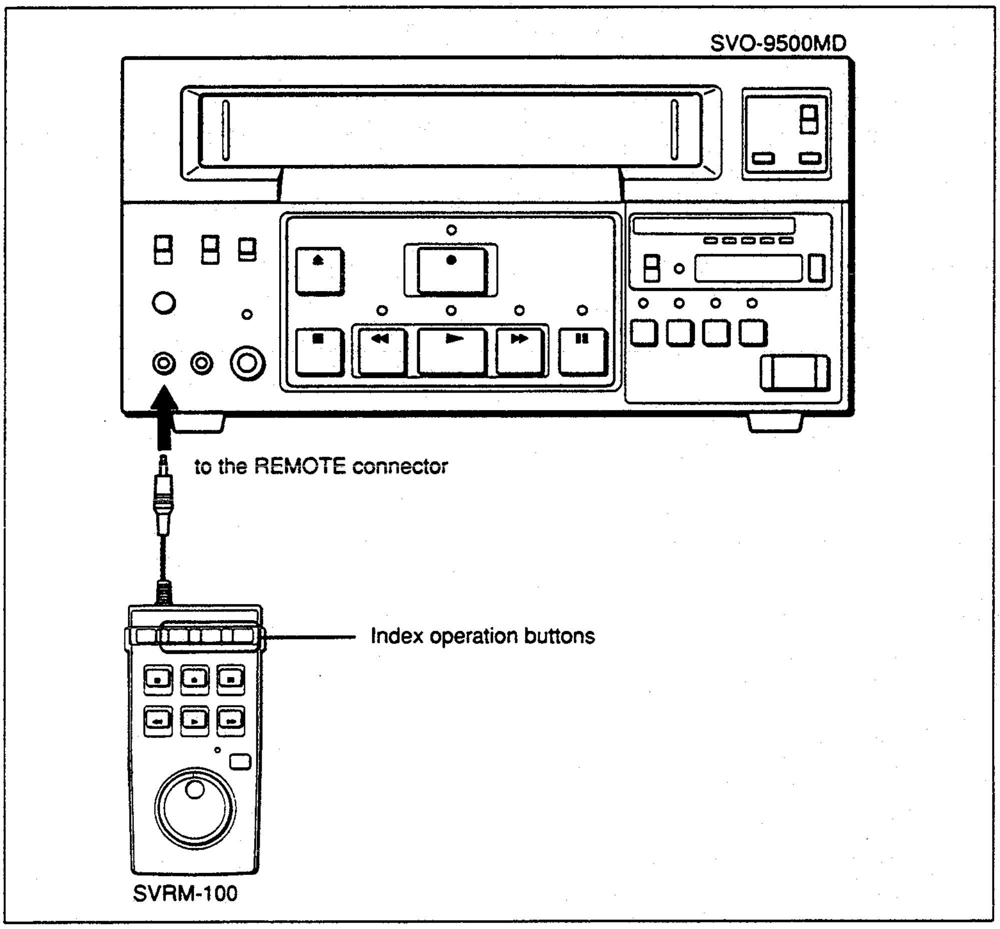
To erase the memory
You can memorize only one point for each MARK IN A or B button.
If the button is pressed several times, only the last point will be memorized.
When the RESET button is pressed with the PROGRAM switch set at OFF or $\rightarrow\overset{A}{|}\leftarrow$, the data are erased from memory and the "0:00:00" point will be memorized on both buttons.

Index Operation (VISS) VISS: VHS Index Search System

By detecting an index signal recorded on a tape, a specific program can easily be located. The index operation is performed on the SVRM-100 remote control unit (optional) connected to the recorder. **Note that the index operation is not possible only with the recorder.**

To mark index signals

The index signals can be either automatically or manually marked. Automatic marking mode is selected at the factory. To change the mode, see "Menu Operations" (page 28).



Automatic marking
Press the STOP ■ button to set the recorder to stop mode. When recording is started by simultaneously pressing the REC ● button and PLAY ▶ button in this status, an index signal for 2.1 seconds is automatically marked at the starting point of recording.
No index signal is marked when recording is started from pause mode.

Manual marking

When manual marking mode is selected through a menu operation, mark index signals as follows.

When the recorder is in recording or playback mode, press the MARK button on the remote control unit. The MARK indicator on the recorder blinks and an index signal is marked for about 2.1 seconds. When marking is completed, the MARK indicator goes off.

When the recorder is in stop or pause mode, the MARK indicator lights up when the MARK button is pressed to show that the recorder is in marking standby mode. When the recorder is set to recording or playback mode, the MARK indicator starts blinking and an index signal are marked for about 2.1 seconds. When marking is completed, the MARK indicator goes off.
If the recorder is set to modes other than recording or playback, marking standby mode is cancelled.

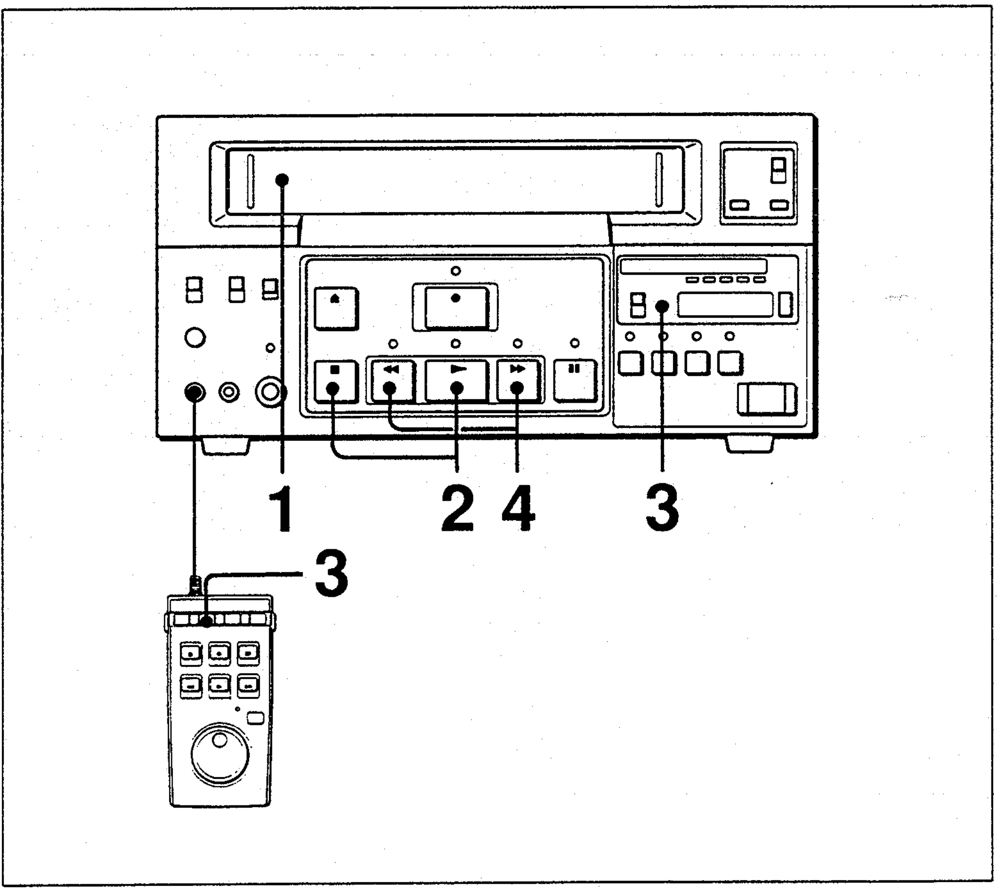
You cannot mark any index signal:

- when using a cassette without its safety tab. (Nor can you erase the recorded index signals on the tape.)
- on an unrecorded portion of a tape

Notes on marking index signals

- Mark an index signal more than 2 or 3 minutes before or after the previous index signal so than the recorder can detect it correctly.
- While an index signal is being marked during playback, the sound is not heard, but it will not be erased.

To find the desired picture – Index scan



1 Insert a cassette with index signals marked.

2 Set the recorder to stop or pause mode.

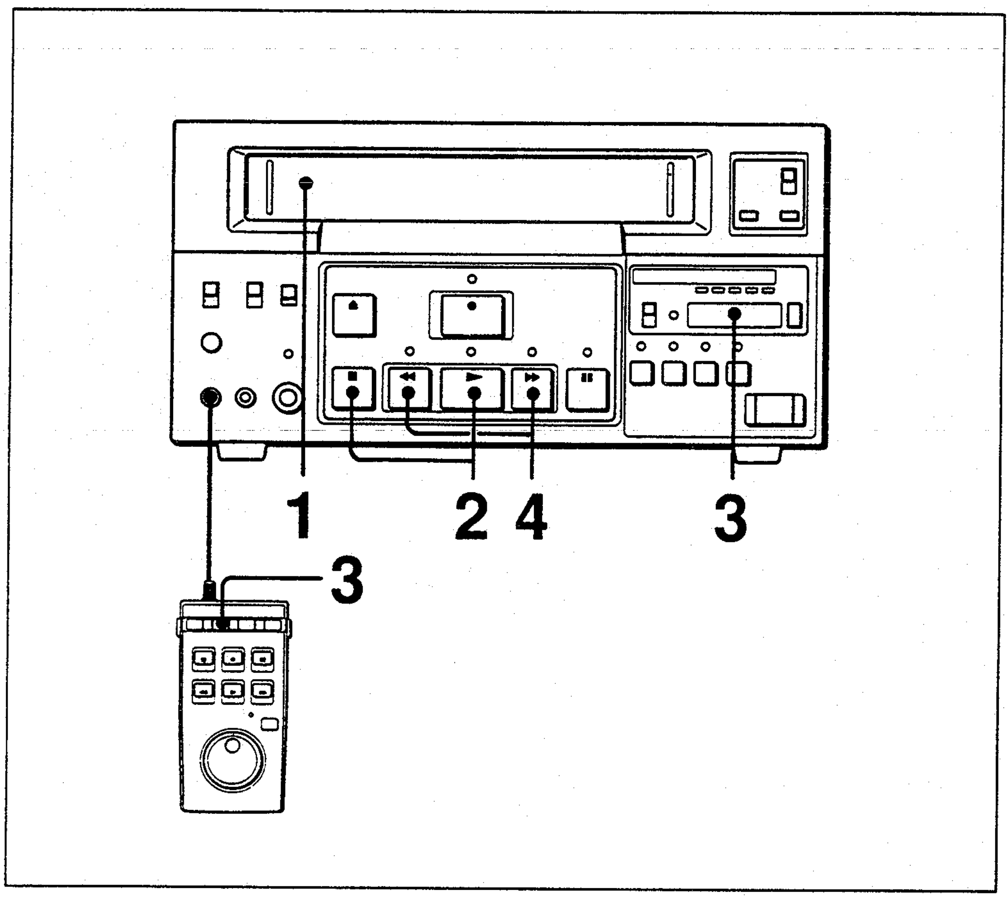
3 Press the INDEX button on the remote control unit.
This activates index scan mode, and the INDEX indicator on the recorder lights up.

4 To scan previous programs, press REW ◀◀ button.
To scan programs ahead, press F FWD ▶▶ button.
Upon finding an index signal, the recorder plays back the tape for approximately 10 seconds and then starts to search for the next index signal.
Repeat the above procedure up to the beginning or the end of the tape.

To release index scan mode

When the tape is scanned up to the beginning or the end, index scan mode is automatically released and the INDEX indicator goes off.
To release the mode in the middle of a tape, press a tape transport button other than the F FWD ▶▶ or REW ◀◀ button.

To find the desired picture by specifying with a number – Index search



1 Insert a cassette with index signals marked.

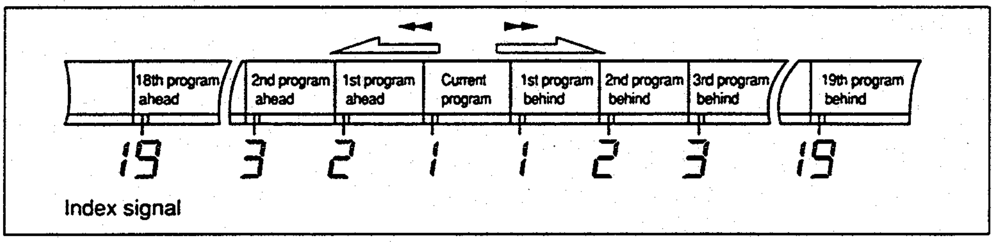
2 Set the recorder to stop or playback mode.

3 Press the INDEX button the number of times there are index signals between the desired point and the current point on the tape (backward or forward).
Up to 39 numbers can be designated. The designated number is displayed on the time counter.

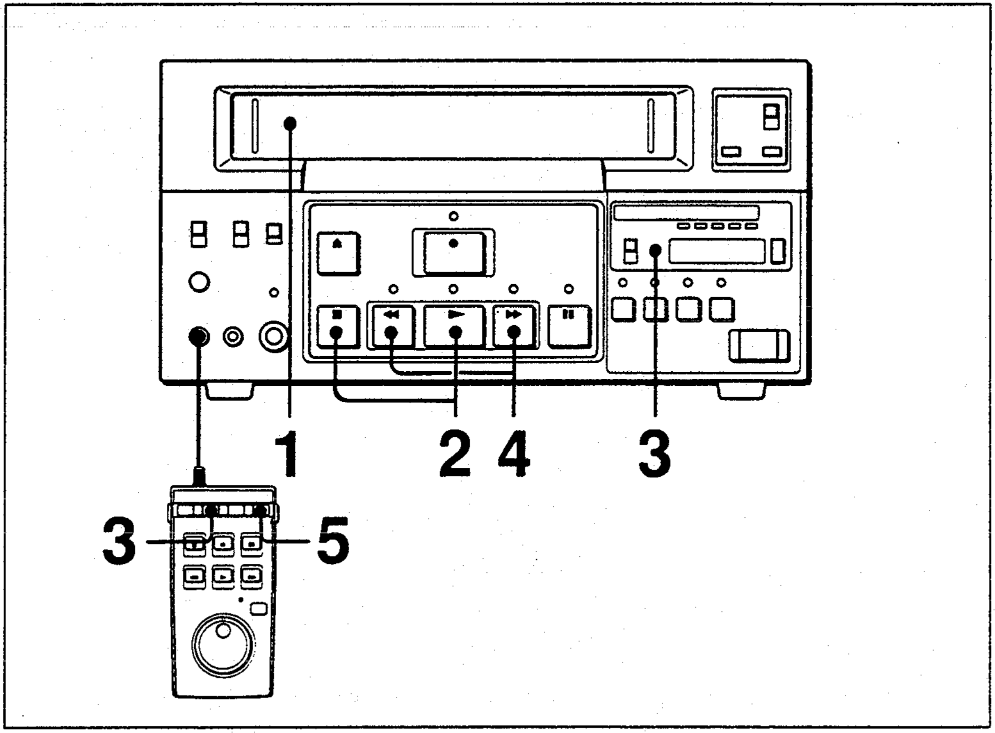
4 To locate a picture before the current point on the tape, press the REW ◀◀ button.
To locate a picture after the current point, press the F FWD ▶▶ button.
Every time an index signal is detected, the number on the time counter decreases by one.
When the number reaches 0, playback begins.

To release index search mode
When the tape is searched up to the beginning or the end, index search mode is automatically released and the INDEX indicator goes off.
To release the mode in the middle of a tape, press a tape transport button other than the F FWD ▶▶ or REW ◀◀ button.

How to designate the index number in index search operation
To search for a picture before the current point on the tape, the current current point is counted as 1.


◀◀
▶▶
18th program ahead
2nd program ahead
1st program ahead
Current program
1st program behind
2nd program behind
3rd program behind
19th program behind
19
3
2
1
1
2
3
19
Index signal

To erase undesired index signals



1 Insert a cassette with index signals marked.

2 Set the recorder to stop or playback mode.

3 Press the INDEX button on the remote control unit.
The INDEX indicator on the recorder lights.

4 To erase the index signal before the current point, press REW ◀◀ button.
To erase the index signal after the current point, press F FWD ▶▶ button.
When an index signal is detected, the recorder enters in playback mode.

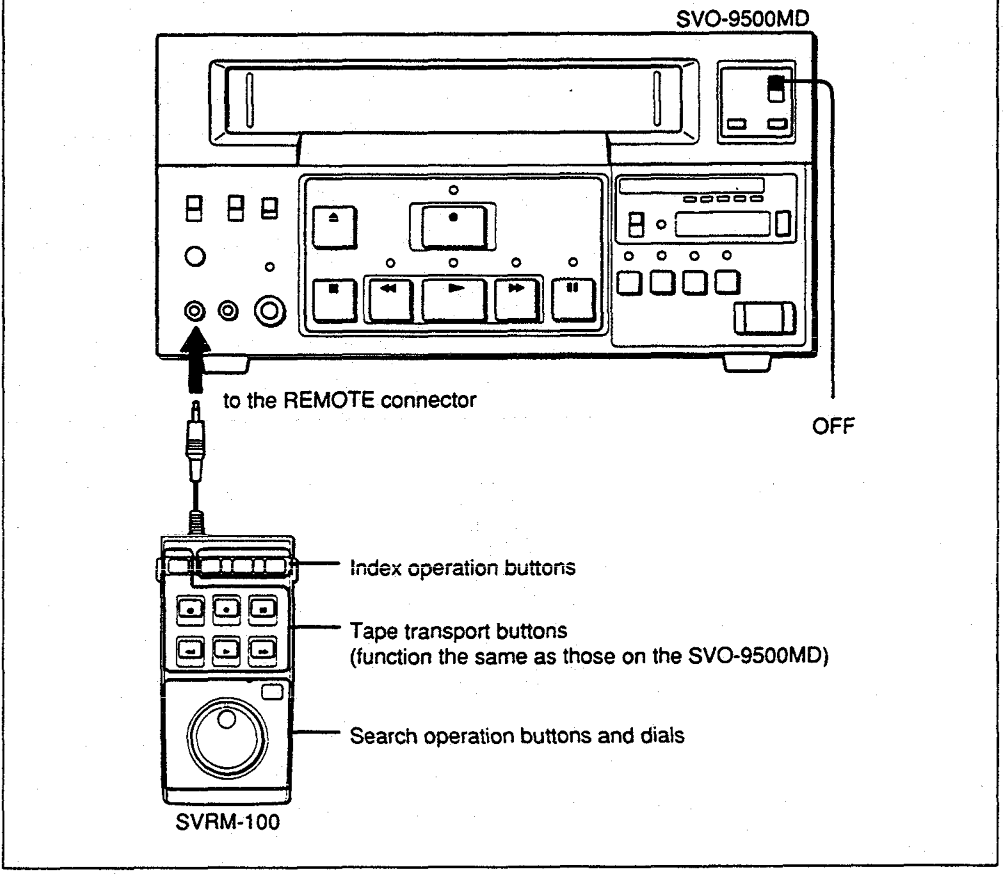
5 Check the picture while it is being played back and when you want to erase the index signal, press the ERASE button on the remote control unit.
The index signal is erased and the recorder searches for the next index signal.

While the index signal is being erased, the sound is not heard but will not be erased.

Using a Remote Control Unit SVRM-100

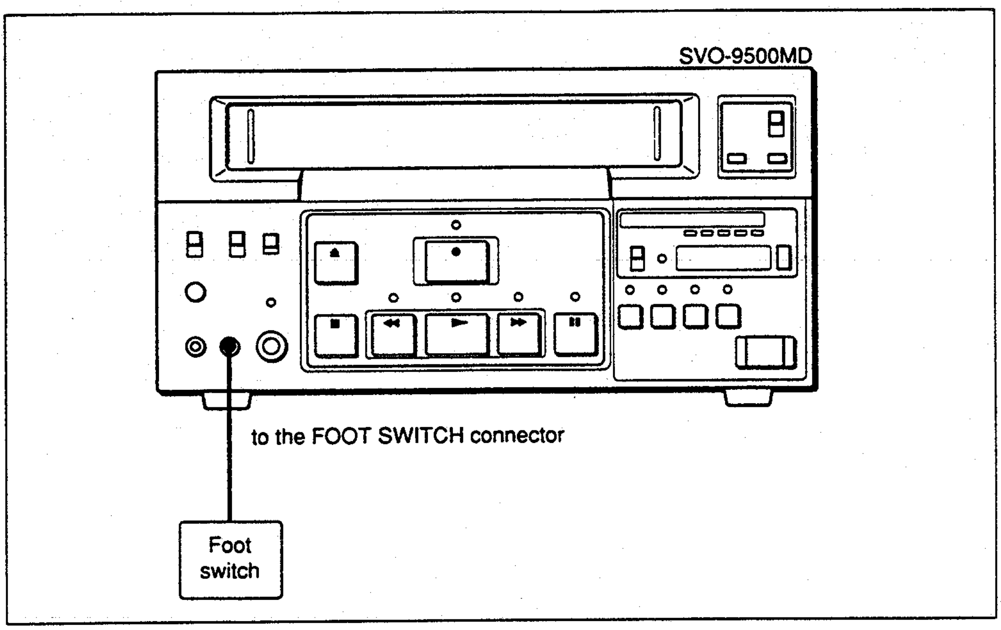
The SVO-9500MD can be remotely controlled from the SVRM-100 remote control unit (optional). With the SVRM-100, index operation and search operation and jog/shuttle search operations using search dials are possible. The buttons on the SVRM-100 which correspond to those on the recorder function the same.

- To use the SVRM-100, be sure to set the PROGRAM switch of the recorder to OFF.


SVO-9500MD
to the REMOTE connector
OFF
Index operation buttons
Tape transport buttons
(function the same as those on the SVO-9500MD)
Search operation buttons and dials
SVRM-100

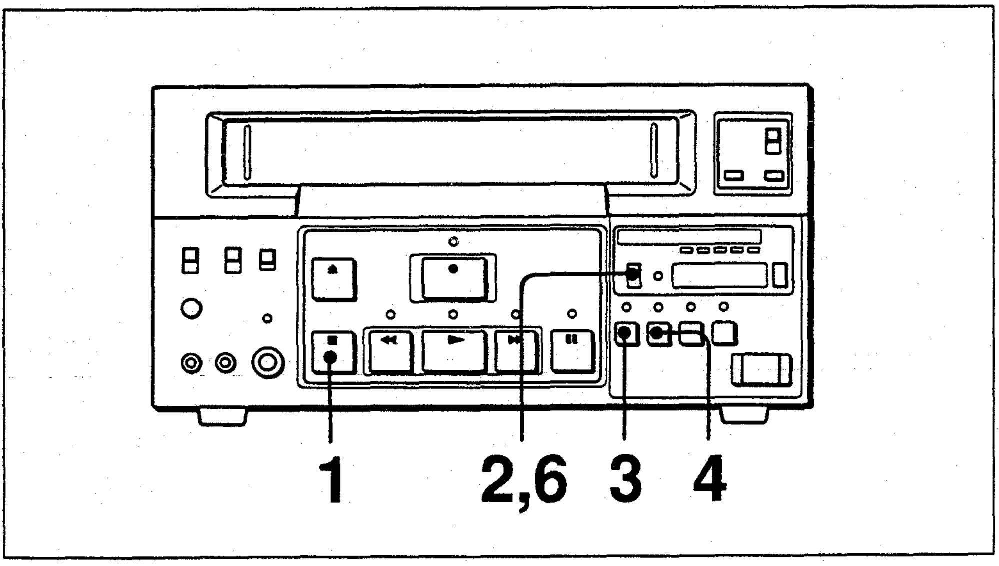
Using a Foot Switch

Recording and playback can be started and stopped from a commercially available foot switch. For details on operations, refer to the instructions for the foot switch. The operation modes of the foot switch can be changed through a menu operation. For details, see "Menu Operations" (page 28).


SVO-9500MD
to the FOOT SWITCH connector
Foot switch

1-8. MENU OPERATIONS

Operation modes of the recorder can be set as follows.



1 Set the recorder to stop mode.

2 Set the CTL/MENU switch to MENU.
The items which can be set are displayed on the time counter block. (See the next page.)

3 Press the ITEM button to select the item to be set.

4 Press the DATA button to set the data for the selected item.

5 Repeat steps 3 and 4 for the necessary items.

6 Set the CTL/MENU switch to CTL.
The data specified in steps 3 and 4 are now stored.

Set item	Display	Set data
VISS operation mode	uIA-$\boxed{\text{On}}$ -OF	To automatically mark VISS index signals. To manually mark VISS index signals.
Foot switch operation mode	FOt-$\boxed{\text{LE}}$ -LL -HE	To use the low edge of a pulse as the trigger. To turn on/off at the lower level of a pulse. To use the high edge of a pulse as the trigger.
Tape end operation mode	tPE-rE -St $\boxed{\text{Et}}$	To automatically rewind the tape from the end in recording mode. To automatically stop the tape at the end in recording mode. To automatically eject the cassette at the end of the tape in recording mode.
S-VHS recording selection	SuH-$\boxed{\text{At}}$ -OF	To automatically record on an S-VHS tape with the S-VHS system and on a VHS tape with the VHS system. To record on both S-VHS and VHS tape with the VHS system.
Digital CNR ON/OFF	Cnr-$\boxed{\text{On}}$ -OF	To turn on the digital chroma noise reducer. To turn off the digital chroma noise reducer.
Digital YNR ON/OFF	Ynr-$\boxed{\text{On}}$ -OF	To turn on the digital luminance noise reducer. To turn off the digital luminance noise reducer.
Digital Y enhancer ON/OFF	YEn-$\boxed{\text{On}}$ -OF	To turn on the digital enhancer. To turn off the digital enhancer.
Freeze mode selection	FrE-$\boxed{\text{Fr}}$ -FI	To initially display a frame freeze picture. To initially display a field freeze picture.

☐ : Factory setting

1-9. TROUBLESHOOTING

Should you have a problem on your recorder, first check the three items in Check 1 and then the appropriate item in Check 2 or Check 3.

CHECK 1

1 Check that the AC power cord is firmly connected. (See page 6.)

2 Check that the POWER switch is set to ON.

3 Check the connections. (See page 6.)

CHECK 2

Symptoms	Possible causes and corrective actions	Page for ref.
AUTO OFF lamp lights and function buttons do not function.	Moisture has condensed inside the unit. Keep the power on and wait until the lamp goes off indicating that the moisture has evaporated.	31
The tape suddenly stops and function buttons do not function.	Eject the cassette and take up the leader tape manually.	—
The cassette cannot be ejected.	Turn off the recorder and contact your nearest Sony facility.	—

CHECK 3

Symptoms	Corrective actions	Page for ref.
A cassette cannot be inserted.	• Insert the cassette correctly. • Check whether another cassette has already been inserted. • Check whether the AUTO OFF lamp is lit.	— — 31
The tape does not run when any of the function buttons is pressed. Recording cannot be done.	• Check that the REC lamp is lit. • Check that the safety tab on the rear of the cassette is in place. • Check that the PROGRAM switch is set at OFF.	— 7 —
Snow or streaks appear on the playback picture.	• Adjust the TRACKING control. • Clean the video head.	14 31

Moisture condensation

When the unit is moved directly from a cold place to a warm place, or when the unit is operated in a place with high humidity, moisture may condense inside the unit. If the tape runs in this condition, it may adhere to the head drum or the tape guide and be damaged. To prevent this possibility, the unit is equipped with a moisture detector. The AUTO OFF lamp lights to indicate that moisture has been detected inside the unit. When this lamp is lit, the cassette is automatically ejected, if it is inserted, and the unit does not function, even if any of the function buttons is pressed.

- When the unit is first moved to place in which it is subjected to condensation, we **recommend you to wait for about ten minutes and to turn the power on** so that the moisture detector will operate.

Video Head Cleaning

If the picture temporarily disappears or if snow or noise show up in the picture

The video head may be contaminated and should be cleaned. Use the optional cleaning cassette and perform cleaning as follows.

1. Remove the cassette being played.
2. Insert the cleaning cassette in the same manner as standard cassettes.
3. Press the RESET button to set the tape counter to "0:00:00."
4. Press the PLAY ▶ button and the REC ● button simultaneously.
5. When the time counter indication reaches "0:00:30," press the STOP ■ button to stop the tape.
6. Remove the cassette.

Notes

- **Do not run a cleaning cassette for more than 30 seconds at a time.** Excessive use of the cleaning cassette will shorten the life of the heads.
- The tape counter does not function when no video signal is connected to the recorder. Count the time using a watch.
- Do not rewind the cleaning cassette every time it is used. Run the tape to its end, then rewind it.
- You can run through a cleaning cassette several times, although it does gradually become less effective.

Video Head Replacement

If picture quality is still deficient after cleaning, the video heads may need to be replaced. The life of the heads is approximately **500 to 1000 hours of use.** With this unit, the accumulated operation time of the heads can be checked as follows.

1. Set the PROGRAM switch to A⇄B .

2. Keep the RESET button depressed for amount 2 seconds.

   The total accumulated operation time of the head drum is now shown on the counter in 1-hour increments.

Regarding head replacement, please consult your Sony service facility.

SECTION 2
SERVICE INFORMATION

2-1. HOW TO REMOVE AND RE-INSTALL THE EXTERNALS

Remove the externals in the sequence ① Top panel → ② U case → ③ Front panel.

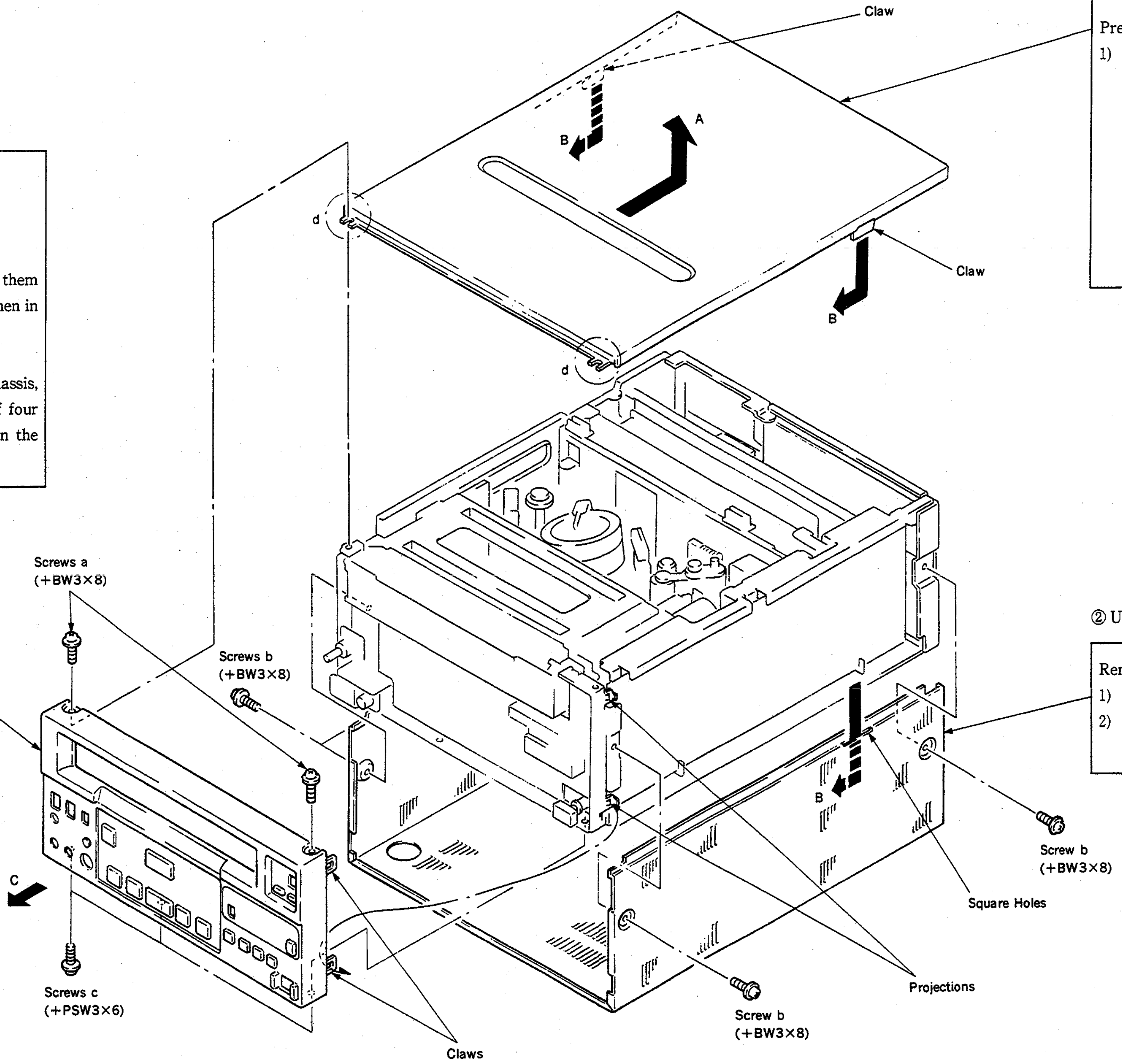
③ Front panel

Removal

1) Remove the top panel.
2) Remove the U case.
3) Remove three c screws.
4) Open four left and right claws slightly, disengage them from the projections in the chassis, and remove then in the direction of arrow C.

Precautions for re-installation

1) While aligning the boss with the hole in the chassis, push in the front panel until the square holes of four left and right claws lock into the projections on the chassis.


Claw
A
B
d
d
Claw
B
Screws a
(+BW3×8)
Screws b
(+BW3×8)
B
Screw b
(+BW3×8)
Square Holes
C
Screws c
(+PSW3×6)
Projections
Screw b
(+BW3×8)
Claws

① Top panel

Removal

1) Remove two screws a, then remove the panel in the direction of arrow A.

Precautions for re-installation

1) Insert two left and right claws into the square holes in the U case, then move the d part in the direction of arrow B and insert it between the front panel and the chassis. (Fig. 1)

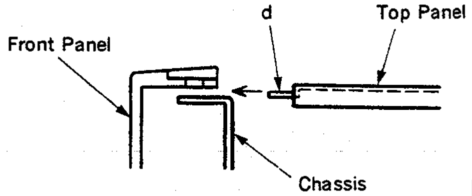

d
Top Panel
Front Panel
Chassis

Fig. 1

② U case

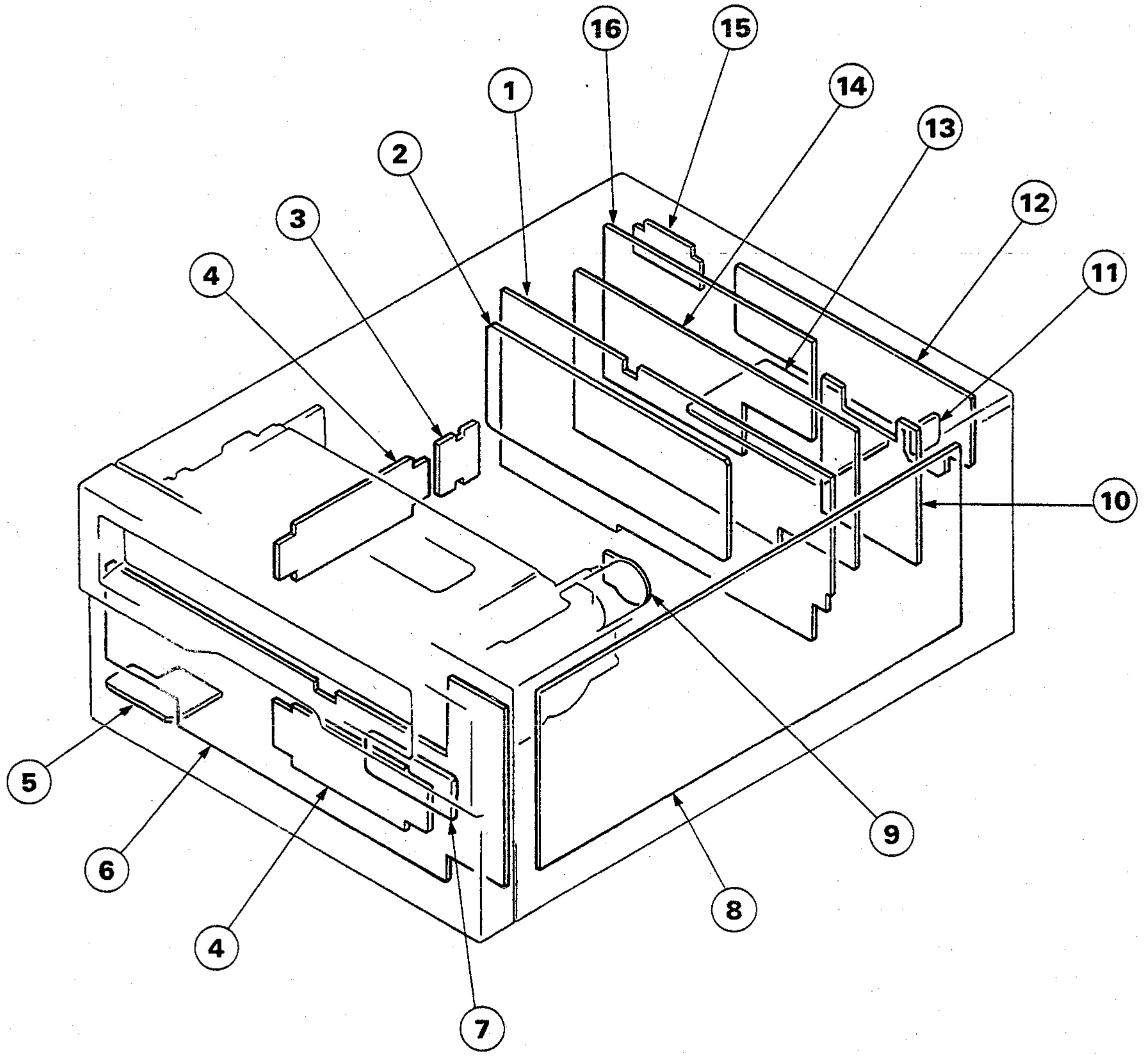
Removal

1) Remove the top panel.
2) Place the unit with the top face at the bottom, then remove four left and right screws b.

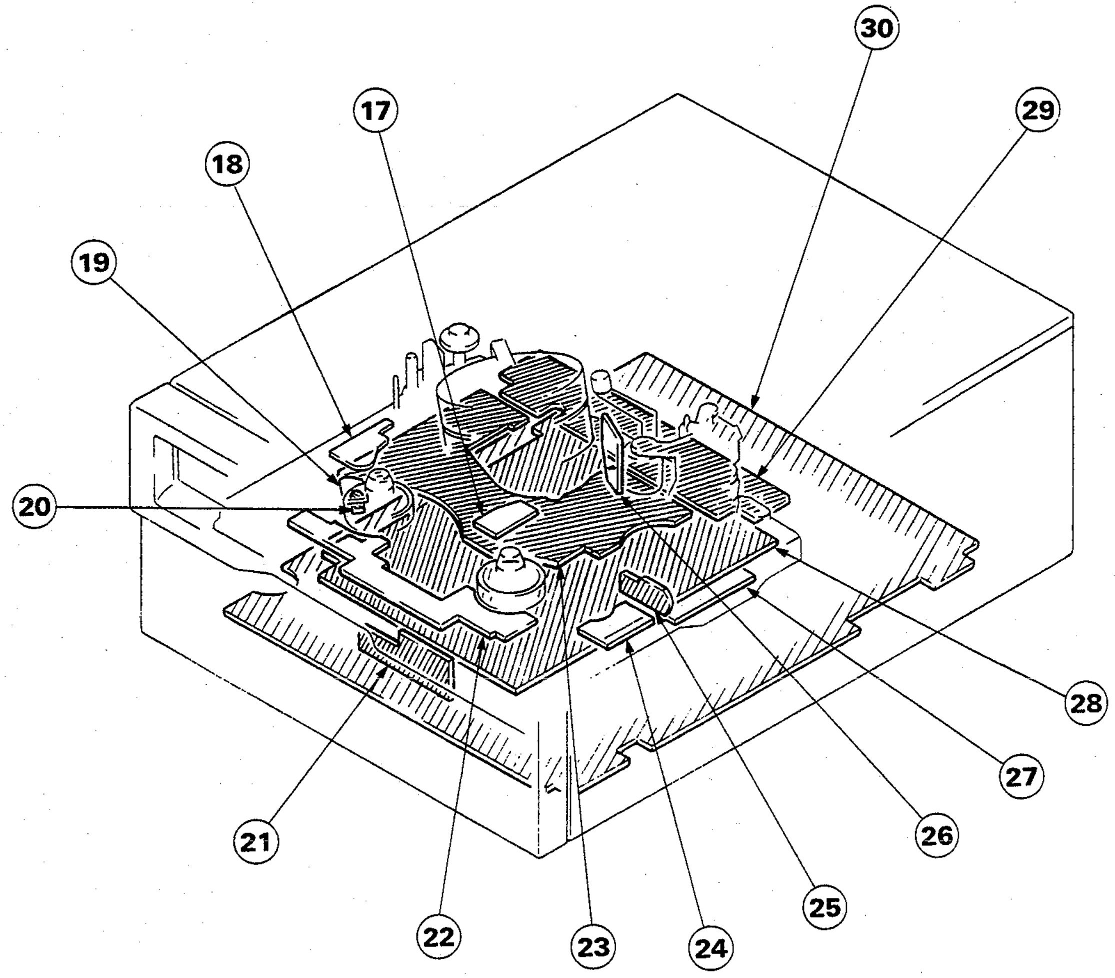
2-2. LOCATION OF MAIN PARTS

2-2-1. Location of the Printed Circuit Boards

Regarding to the circuit function of printed circuit boards is mentioned in sub-section2-3 on Page 2-4.



① VO-37 Board
② RP-62 Board
③ DUS-544 Board
④ DR-153 Board
⑤ CN-633 Board
⑥ KY-219 Board
⑦ DP-165 Board
⑧ AU-161 Board
⑨ CM-14 Board
(Cassette Compartment)
⑩ AC-131A Board
⑪ DUS-442 Board
⑫ CP-183 Board
⑬ DC-53 Board
⑭ CR-38 Board
⑮ RM-106 Board (SVO-9500MD4)
⑯ RM-105 Board (SVO-9500MD4)

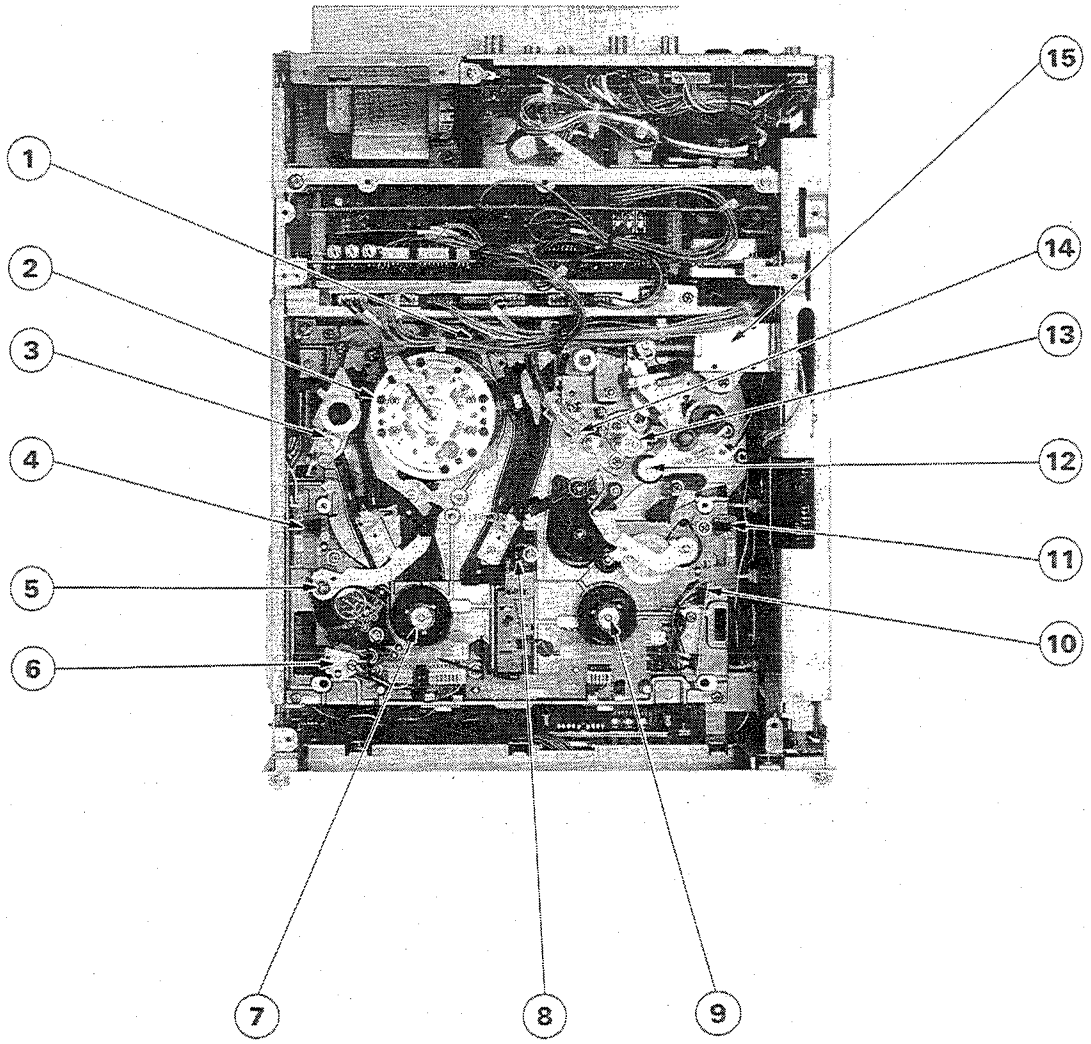


⑰ LE-80 Board
⑱ SE-151 Board
⑲ SE-159 Board
⑳ LE-86 Board
㉑ DUS-445 Board
㉒ HN-160 Board
㉓ DR-167 Board
㉔ SE-152 Board
㉕ LD-35 Board
㉖ AH-28 Board
㉗ DUS-534 Board
(DUS-534 board is nonexistent on S/N
10000 series of SVO-9500MD.)
㉘ VM-12 Board
㉙ DR-176 Board
㉚ SS-49 Board

2-2-2. Location of the Main Mechanical Parts/Components

(TOP VIEW)

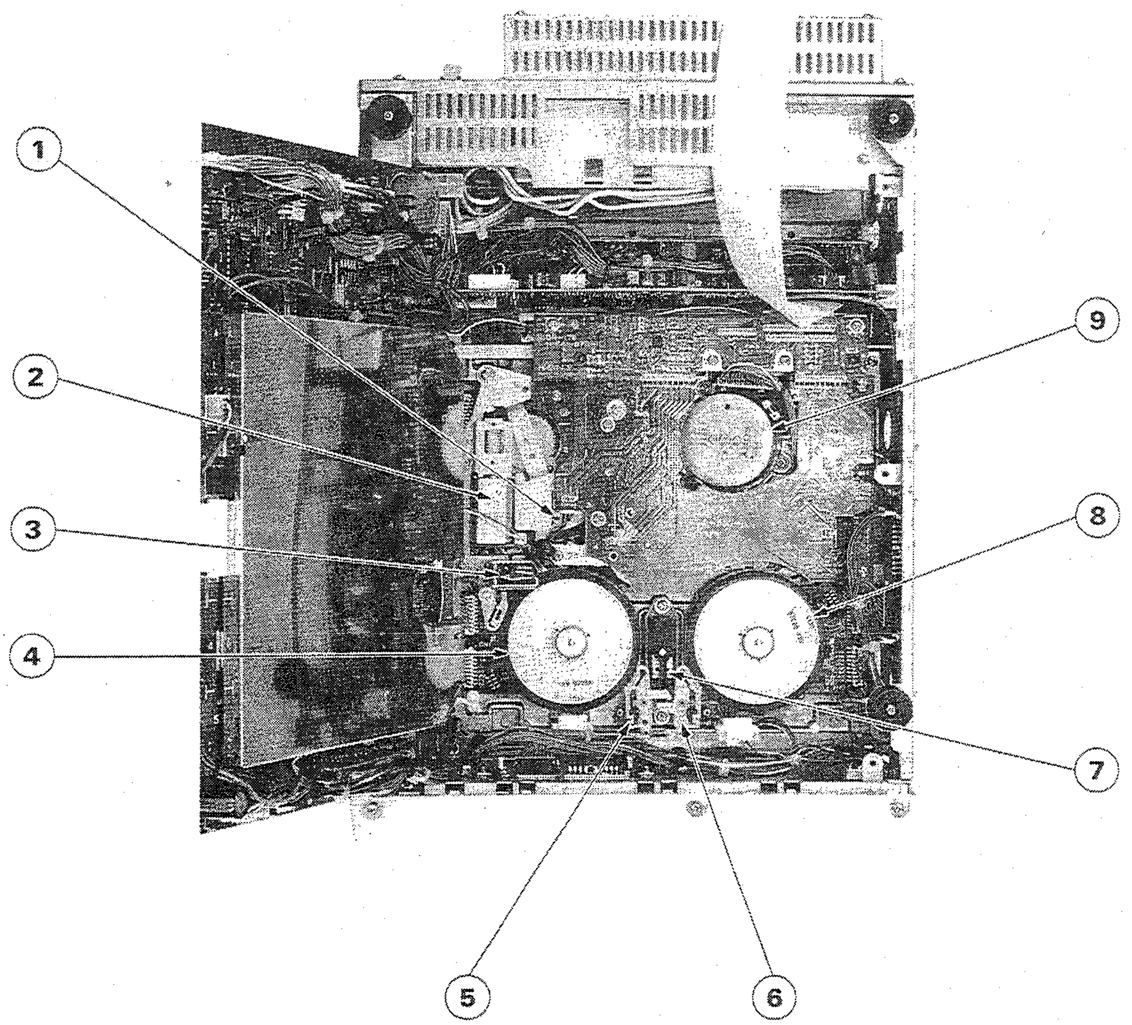
Note: A photograph is the SVO-9500MD.



① Cleaning Roller
② Drum Assembly
③ Full Erase Head
④ Tape End Sensor
⑤ Tension Regulator
⑥ Miss REC Switch
⑦ Supply Reel Table
⑧ Tape Top/End LED
⑨ Take-up Reel Table
⑩ Cassette Down Switch
⑪ Tape Top Sensor
⑫ Pinch Roller
⑬ Capstan Shaft
⑭ AUDIO/CTL Head
⑮ Pinch Solenoid

(BOTTOM VIEW)

Note: A photograph is the SVO-9500MD.



① Capstan Motor
② Cam Motor Assembly
③ LDB Brake Solenoide
④ Take-up Reel Motor
⑤ T · Brake Arm
⑥ S · Brake Arm
⑦ Brake Solenoid
⑧ Supply Reel Motor
⑨ Drum Assembly

2-3. CIRCUIT FUNCTION OF PRINTED CIRCUIT BOARDS

SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	RP-62	Video Head Amp.
	CR-38	Chroma Process
	VM-12	Y/C Noise Reducer, Video Memory, Chroma Decoder/Encorder
	VO-37	Process
AUDIO	RP-62	AFM Head Amp.
	AU-161	AFM Process, Normal Audio Process
	AH-28	Audio/Erase/CTL Head
SERVO • SYSTEM CONTROL	SS-49 Include DUS-445 DUS-534	Servo & System Control
	DR-153 (a)	T-Reel Driver
	DR-153 (b)	S-Reel Driver
	DR-167	CAM Mode Detect, Drum Motor Driver
	DR-176	Capstan FG Amp, Capstan Motor Driver
	CM-14	Cassette Compartment Motor
	LD-35	Loading Motor
	LE-80	Tape Top/End LED
	LE-86	Tension Regulator LED
	KY-219	Function Key/LED/Switch
	DP-165	Counter Display
	SE-151	Tape End Sensor
	SE-152	Tape Top Sensor
	SE-159	Tension Regulator CDS Detect
	HN-160	Connection
	DUS-544	Capacitor for T-Brake Solenoid
POWER	AC-131A	AC Input
	DC-53	AC-DC Power Regulator
CONNECTOR	CP-183 Include DUS-442	Connection of Rear Connector
	CN-633	Connection of Front Connector
INTERFACE (SVO-9500MD4)	RM-105	34-Pin Interface
	RM-106	Connection of 34-Pin Interface

2-4. CONNECTORS

When external cables are connected to the various connectors on the rear panel during maintenance, the hardware listed below (or equivalents) must be used.

PANEL INDICATION	CONNECTOR/HARDWARE
VIDEO IN VIDEO OUT	1-560-069-11 PLUG, BNC, MALE
VIDEO IN (S VIDEO) VIDEO OUT (S VIDEO)	YC-15EV (1.5 m), YC-30EV (3 m), SYC-2 (2 m), or SYC-5 (5 m) : CABLE (Option)
AUDIO IN AUDIO OUT MONITOR OUT	1-506-138-11 PLUG, PHONO
INDICATE	SVAC-100 (Option)

2-5. CONNECTOR INPUT/OUTPUT SIGNAL

The audio/video connector INPUT/OUTPUT signals of the connector panel are as follows.

INPUT

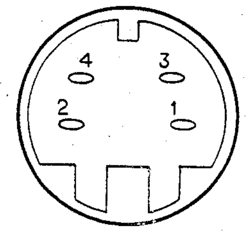
VIDEO IN : BNC type×2 for a bridging connection
$1.0\pm^{1}_{0.5}$ V p-p, 75 ohms, Unbalanced, Sync negative
S VIDEO IN : 4-Pin mini DIN×2 for a bridging connection (See below)
Luminance signal : 1.0 V p-p, 75 ohms, Unbalanced
Color signal : 0.286 V p-p, 75 ohms, Unbalanced
AUDIO IN : Phono jack×2
CH-1/L, CH-2/R −10 dBs (0 dBs=0.775 Vrms), 47 kilohms, Unbalanced
MIC : Phone jack×1
−60 dBs (0 dBs=0.775 Vrms), 3 kilohms, Unbalanced

OUTPUT

VIDEO OUT : BNC type×1
1.0±0.2 V p-p, 75 ohms, Unbalanced, Sync negative
S VIDEO OUT : 4-Pin mini DIN×1 (See below)
Luminance signal : 1.0 V p-p, 75 ohms, Unbalanced
Color signal : 0.286 V p-p, 75 ohms, Unbalanced
AUDIO OUT : Phono jack×2
CH-1/L, CH-2/R −10 dBs (0 dBs=0.775 Vrms), (47-kilohm load), Unbalanced
MONITOR OUT : Phono jack×1
−5 dBs (0 dBs=0.775 Vrms), (47-kilohm load), Unbalanced

- **S VIDEO Connector**

〈external view〉



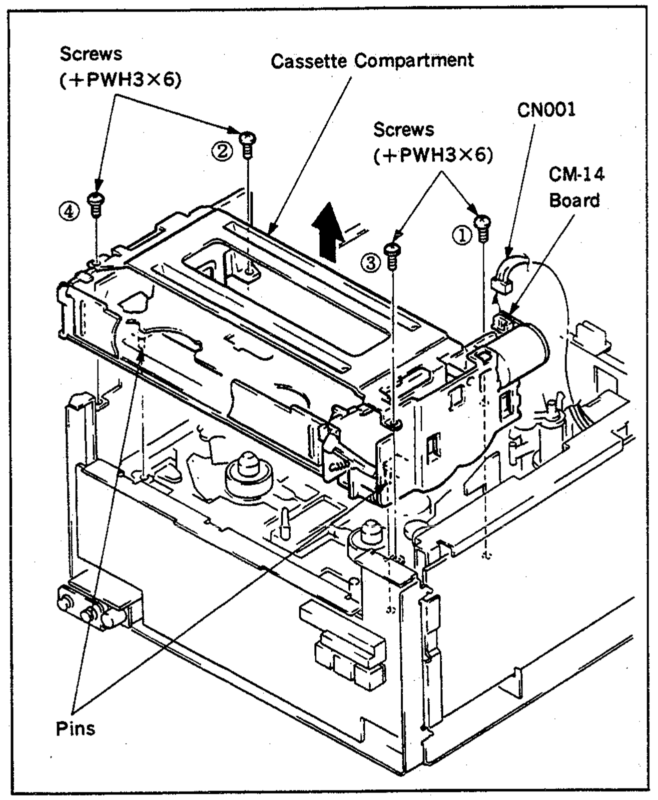
Pin No.	Signal
1	LUMINANCE(G)
2	COLOR(G)
3	LUMINANCE(X)
4	COLOR(X)

2-6. REMOVAL OF THE CASSETTE COMPARTMENT (FL ASS'Y)

1. Remove the top panel, U case and front panel according to sub-section 2-1.
2. Disconnect connector CN001 from the CM-14 board.
3. Remove four screws, then remove the cassette compartment in the direction of the arrow.

Precautions of re-installing the cassette compartment.

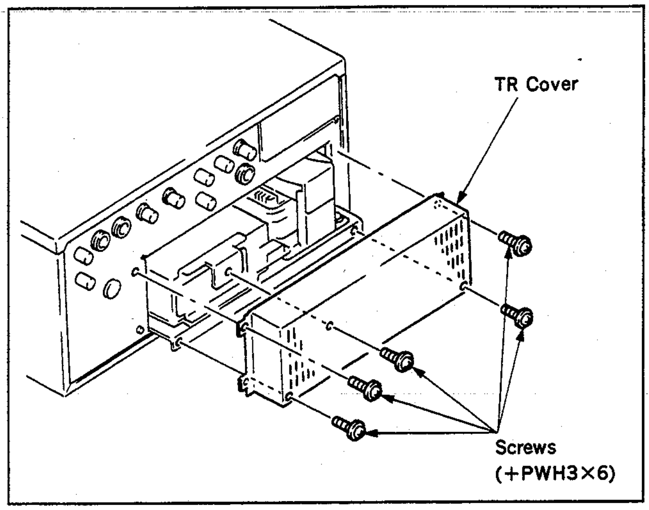
1) Align two pins of cassette compartment to the holes of mechanical shassis.
2) Fix the screws in order from ① to ④.


Screws (+PWH3×6)
Cassette Compartment
CN001
Screws (+PWH3×6)
CM-14 Board
②
④
③
①
Pins

2-7. REMOVAL OF THE POWER SUPPLY BLOCK

2-7-1. Removal of the DC-53 Board

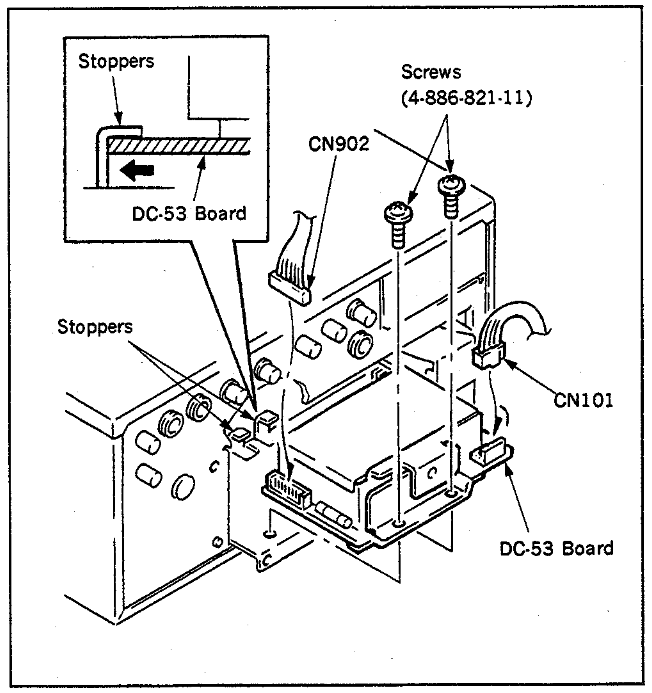
1. Remove five screws, then remove the TR cover.


TR Cover
Screws (+PWH3×6)

2. Disconnect connector CN101 of power trans harness from the DC-53 board.
3. Remove two screws, then pull out the DC-53 board to the position of the figure.
4. Disconnect connector CN902 of power switch harness from DC-53 board.

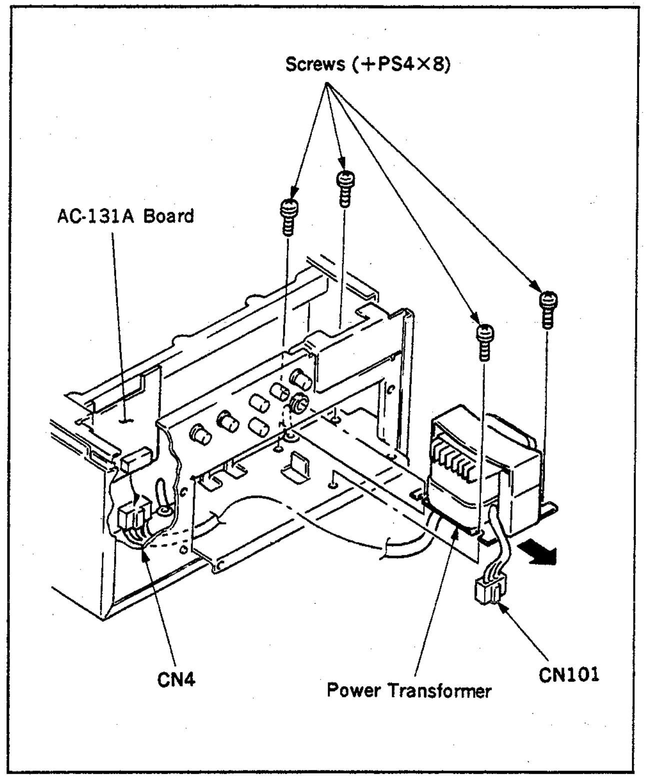
Precautions for re-installing the DC-53 board.

1) Block the DC-53 board for stoppers of chassis, then install the DC-53 board.


Stoppers
DC-53 Board
Screws (4-886-821-11)
CN902
Stoppers
CN101
DC-53 Board

2-7-2. Removal of the Power Transformer

1. Remove the top panel according to sub-section 2-1.
2. Remove the DC-53 board according to sub-section 2-7-1.
3. Disconnect connector CN4 of power trans harness from the AC-131A board.
4. Remove four screws, then remove power transformer in the direction of the arrow.


Screws (+PS4×8)
AC-131A Board
CN4
Power Transformer
CN101

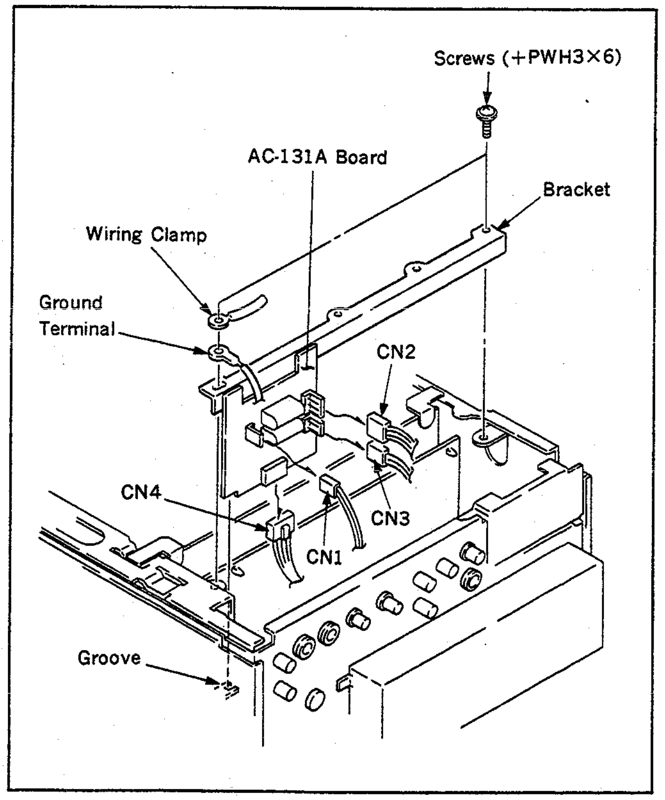
2-8. REMOVAL OF THE PRINTED CIRCUIT BOARD

2-8-1. Removal of the AC-131A Board

1. Remove the top panel according to sub-section 2-1.
2. When the SVO-9500MD4, remove the RM boards according to sub-section 2-8-6. (Note that, there is no need to disconnect the connectors.)
3. Disconnect two connectors (CN2 and 3) from AC-131A board.
4. Remove two screws, then remove the wiring clamp and ground terminal of the CP-183 board.
5. Pull up the bracket with the AC-131A board.
6. Disconnect two connectors (CN1 and 4) from AC-131A board.

Precautions for installation.

1) Align the AC-131A board with the groove of the chassis (right).

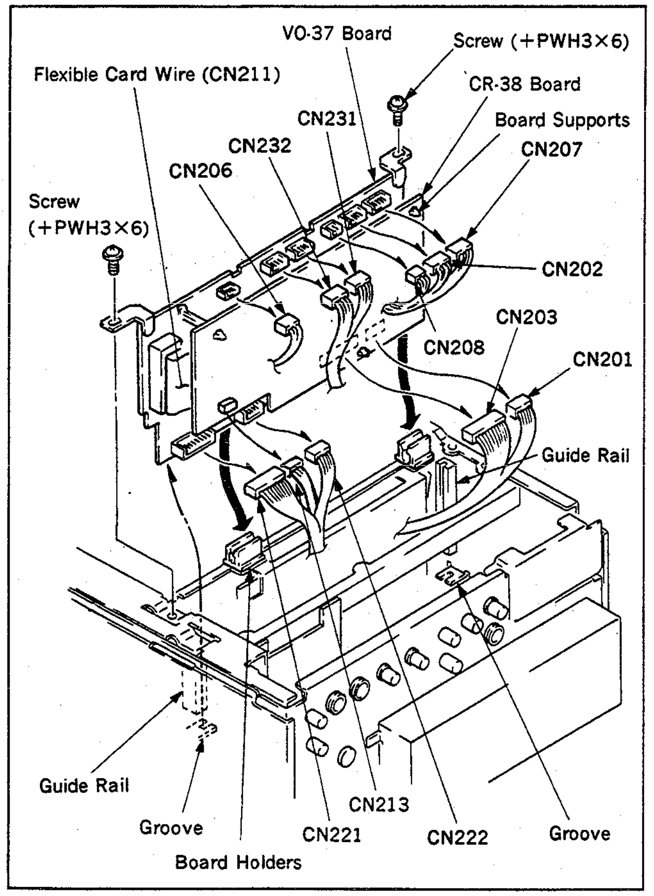

Screws (+PWH3×6)
AC-131A Board
Bracket
Wiring Clamp
Ground Terminal
CN2
CN4
CN3
CN1
Groove

2-8-2. Removal of the VO-37 and CR-38 Boards

1. Remove the top panel according to sub-section 2-1.
2. Remove two screws, and pull up the VO-37/CR-38 boards.
3. Insert the VO-37 board into the two board holders for standing it.
4. Disconnect the connector CN213 from the CR-38 board. (SVO-9500MD S/N 20001 and higher, and SVO-9500MD4)
5. Disengage three board supports from the CR-38 board, and open the CR-38 board.
6. Disconnect ten connectors (CN201, 202, 203, 206, 207, 208, 221, 222, 231 and 232) and the flexible card wire (CN211) from the VO-37 board.

Precautions for installation.

1) Align the VO-37 board with guide rails and grooves of the left/right chassis.

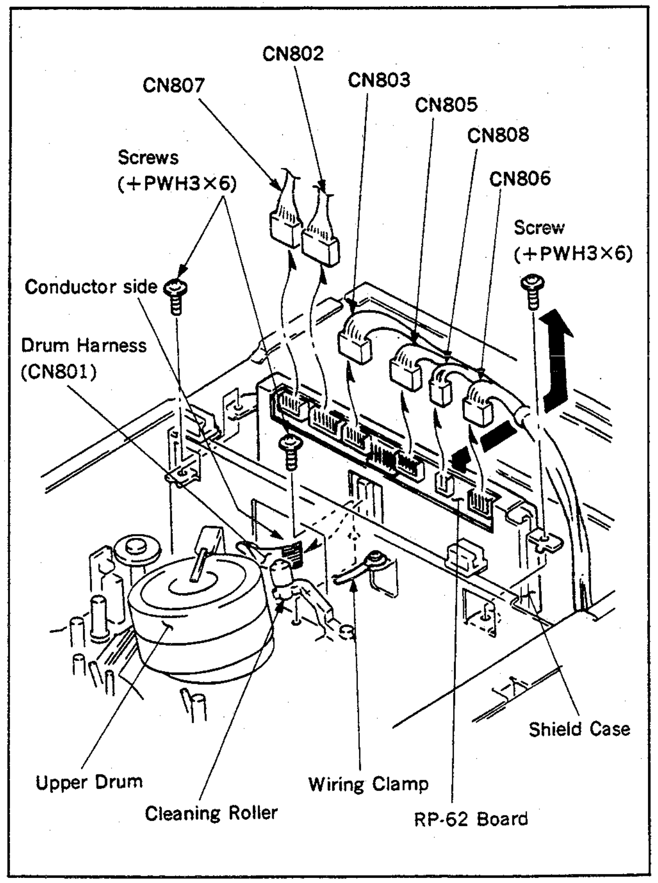

VO-37 Board
Screw (+PWH3×6)
Flexible Card Wire (CN211)
CR-38 Board
CN231
Board Supports
CN232
CN207
CN206
Screw
(+PWH3×6)
CN202
CN203
CN208
CN201
Guide Rail
Guide Rail
Groove
CN213
CN221
CN222
Groove
Board Holders

2-8-3. Removal of the RP-62 Board

1. Remove the top panel according to sub-section 2-1.
2. Remove harnesses from wiring clamp in the figure.
3. Disconnect six connectors (CN802, 803, 805 through 808) from the RP-62 board.
4. Remove the VO-37/CR-38 boards according to sub-section 2-8-2. (Note that, there is no need to disconnect the connectors.)
5. Remove three screws, and then remove the drum harness from CN801 of the RP-62 board.
6. Remove the RP-62 board together with the shield case in the direction of the arrow.

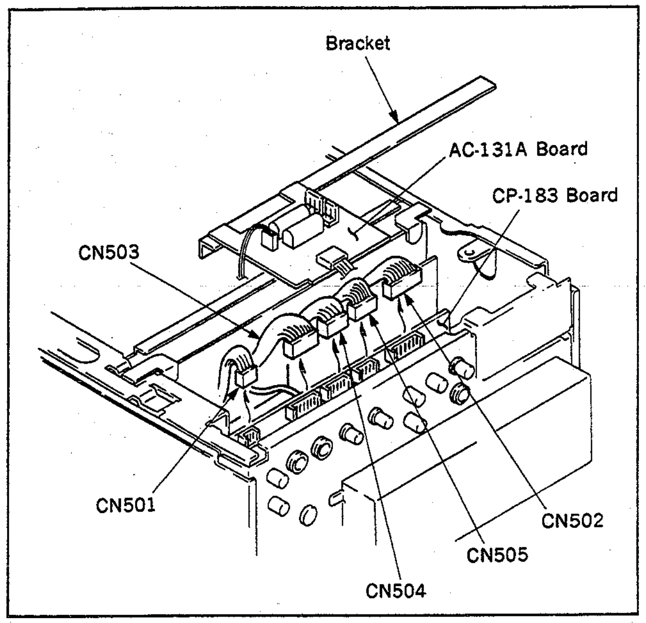
Precautions for installation.

1) Be careful of the direction of the connector side when re-connecting the drum harness.
2) Confirm that the drum harness does not touch the upper drum and the cleaning roller.
3) Secure the harnesses of the connectors CN803, 805, 806 and 808 with wiring clamp.

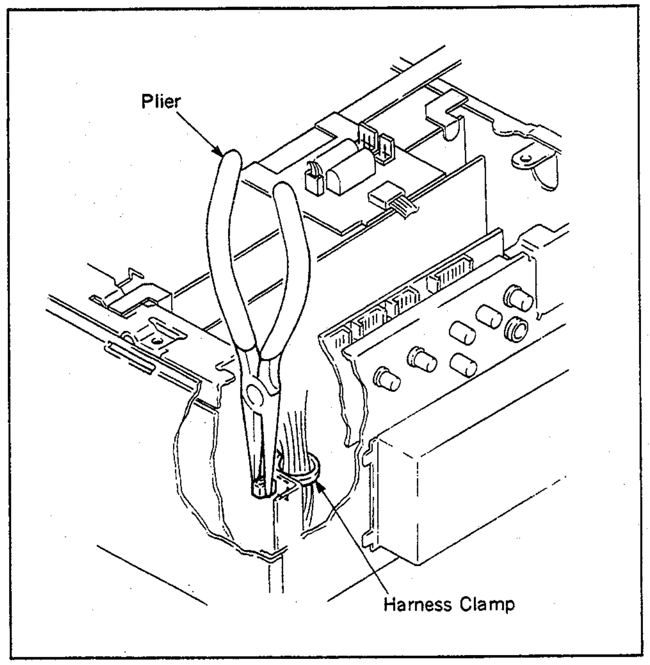

CN802
CN807
CN803
CN805
CN808
Screws
(+PWH3×6)
CN806
Screw
(+PWH3×6)
Conductor side
Drum Harness
(CN801)
Shield Case
Upper Drum
Wiring Clamp
Cleaning Roller
RP-62 Board

2-8-4. Removal of the CP-183 Board

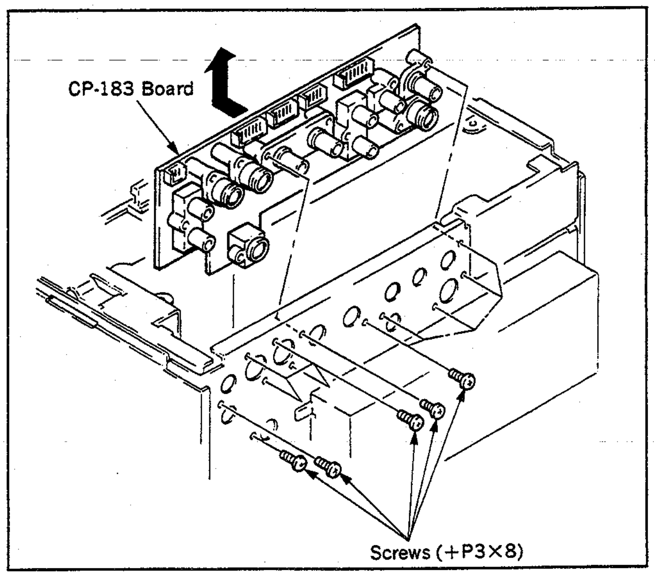
1. Remove the AC-131A boards according to sub-section 2-8-1. (Note that, there is no need to disconnect the connectors CN1 and 4.)
2. Disconnect five connectors (CN501 through 505) from CP-183 board.


Bracket
AC-131A Board
CP-183 Board
CN503
CN501
CN502
CN505
CN504

3. Remove the harness clamp from the position of the figure with pliers.

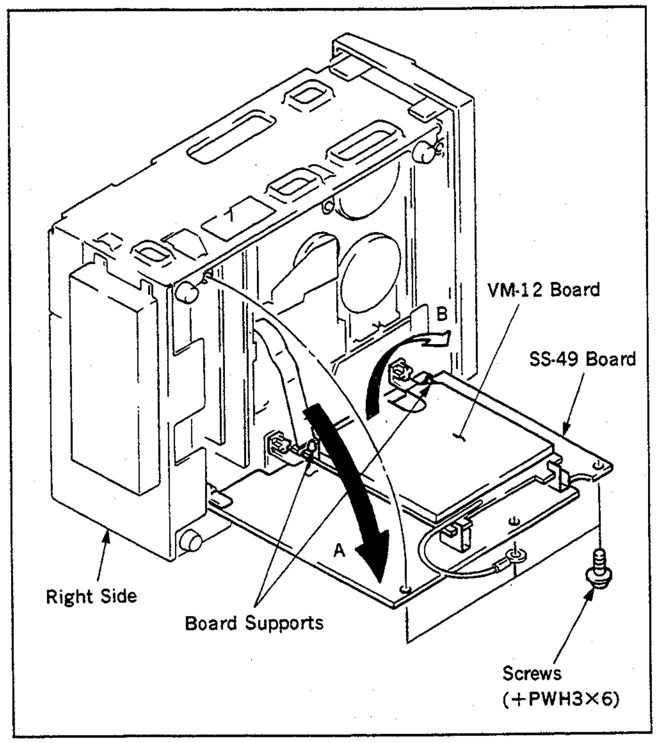

Plier
Harness Clamp

4. Remove twelve screws, then remove the CP-183 board in the direction of the arrow.


CP-183 Board
Screws (+P3×8)

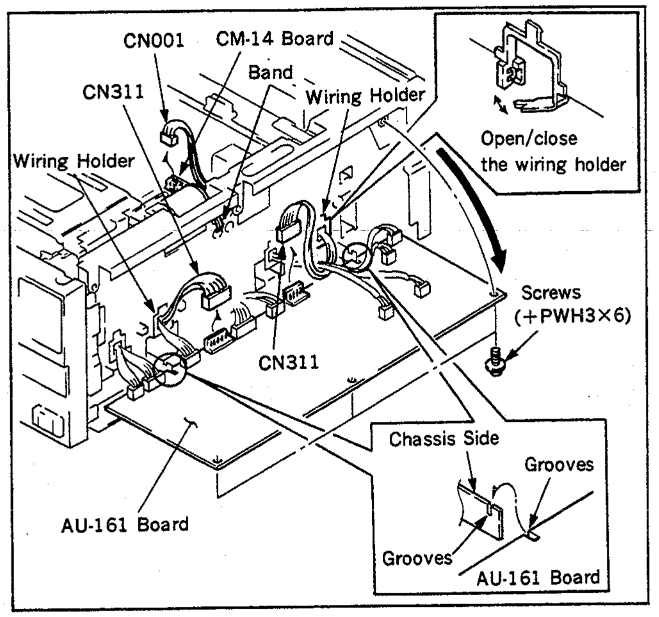
2-8-5. How to open the SS-49 Board

1. Remove the top panel and the U case according to sub-section 2-1.
2. Stand up the VTR with the right side face downward.
3. Remove three screws, then open the SS-49 board in the direction of the arrow A.
4. Disengage two board supports from the VM-12 board, then open the VM-12 board in the direction of the arrow B.

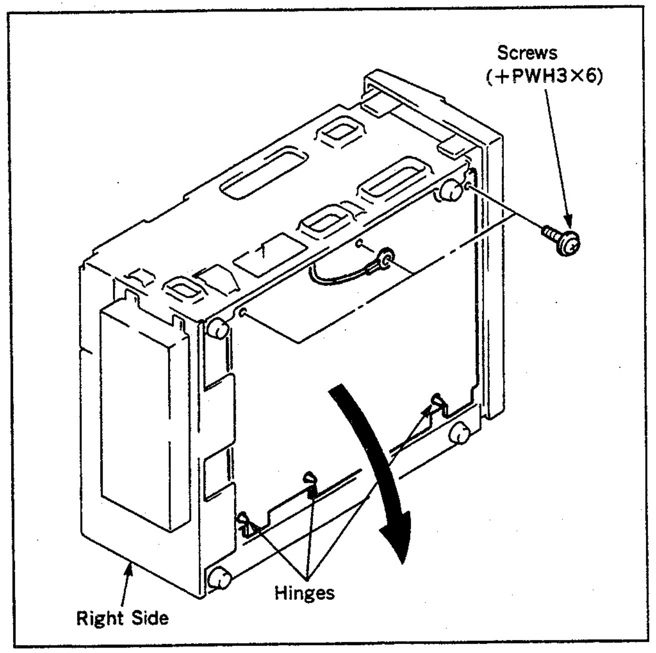

VM-12 Board
B
SS-49 Board
A
Right Side
Board Supports
Screws
(+PWH3×6)

2-8-6. Removal of the SS-49 Board

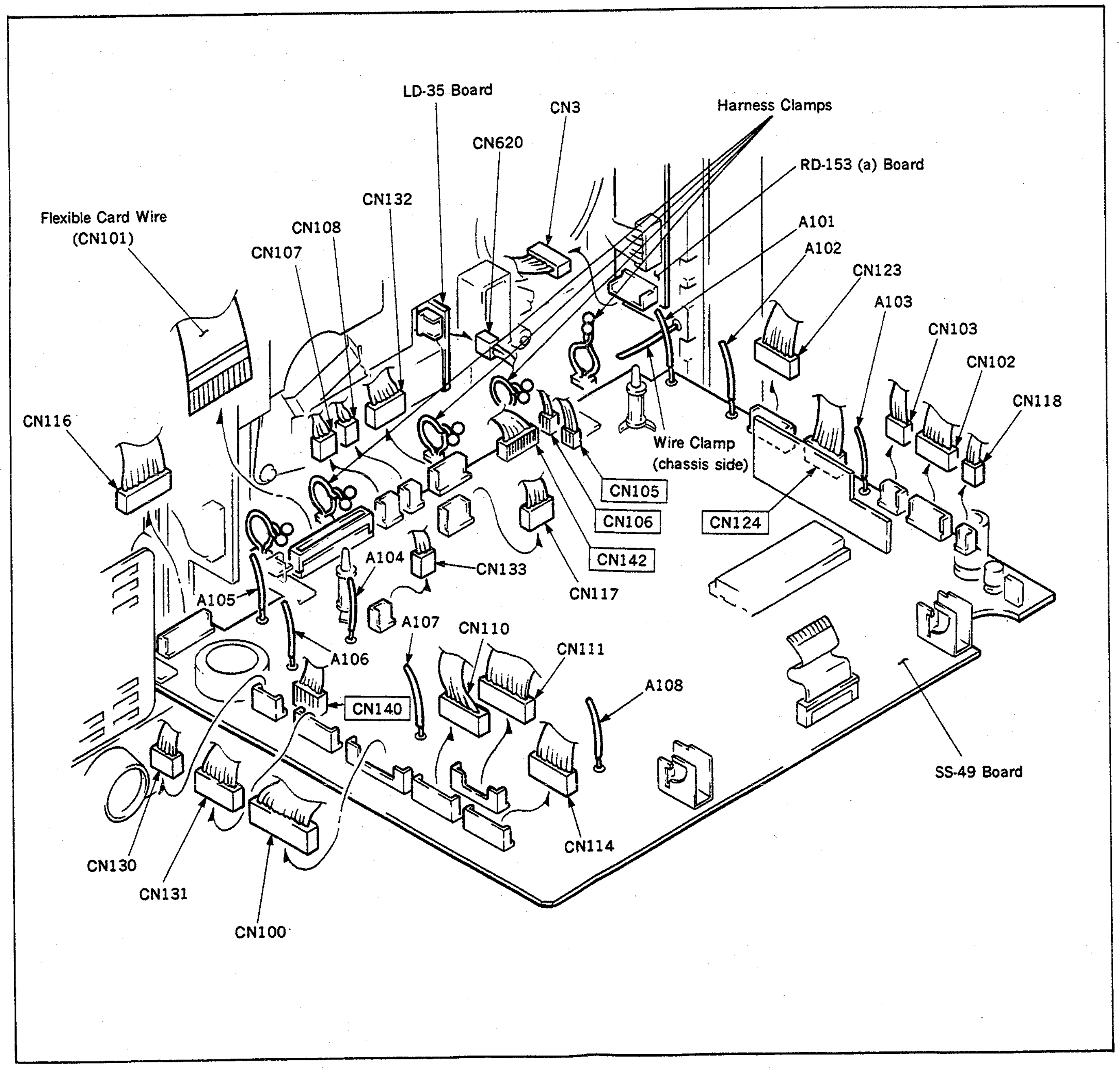
1. Remove three screws, then open the AU-161 board.
2. Disconnect two connectors (CN311, 313) from AU-161 board.
3. Open the two wiring holders in the figure.
4. Disconnect the connector CN001 from CM-14 board, and cut the band securing the harness of CN001.
5. Close the AU-161 board, and secure three screws.
   - Align the grooves of AU-161 board with grooves of the chassis side when re-installing the AU-161 board.


CN001
CM-14 Board
Band
CN311
Wiring Holder
Wiring Holder
Open/close the wiring holder
Screws (+PWH3×6)
CN311
Chassis Side
Grooves
Grooves
AU-161 Board
AU-161 Board

6. Stand up the VTR with the right sude face downward.
7. Disengage three hinges from the SS-49 board.
8. Remove three screws, then open the SS-49 board in the direction of the arrow.


Screws (+PWH3×6)
Right Side
Hinges

9. Remove the VM-12 board according to sub-section 2-8-8.
10. Disengage the harnesses from the wiring clamps (A101 to 108) on the SS-49 board.
11. Disconnect fifteen connectors (CN100, 102, 103, 107, 108, 110, 111, 114, 116 to 118, 123, 130 to 133) and the flexible card wire (CN101) from the SS-49 board.
    (There is no CN133 in the SS-49 board having S/N 10001 to 11620 of SVO-9500MD.)
12. Disengage the four harness clamps and the wire clamp of chassis in the figure.
13. Disconnect the connector CN620 from the LD-35 board, then remove the harness of CN620 from harness clamps.
    (This harness is connected to CN106 on the SS-49 board.)
14. Disconnect the connector CN3 from the DR-153 (a) board, then remove the harness of CN3 from harness clamps.
    (This harness is connected to CN124 on the SS-49 board.)
15. Remove the harness of CN105 on the SS-49 board from harness clamps.
    (This harness was connected to the CM-14 board.)
16. Take out the two harnesses of CN142 and 140 on the SS-49 board from chasiss side.
    (These harnesses was connected to the AU-161 board.)


LD-35 Board
CN3
Harness Clamps
CN620
RD-153 (a) Board
CN132
Flexible Card Wire (CN101)
CN108
CN107
A101
A102
CN123
A103
CN103
CN102
CN118
CN116
Wire Clamp (chassis side)
CN105
CN106
CN124
CN142
A104
CN133
CN117
A105
A107
CN110
A106
CN111
CN140
A108
SS-49 Board
CN114
CN130
CN131
CN100

Precautions for installation

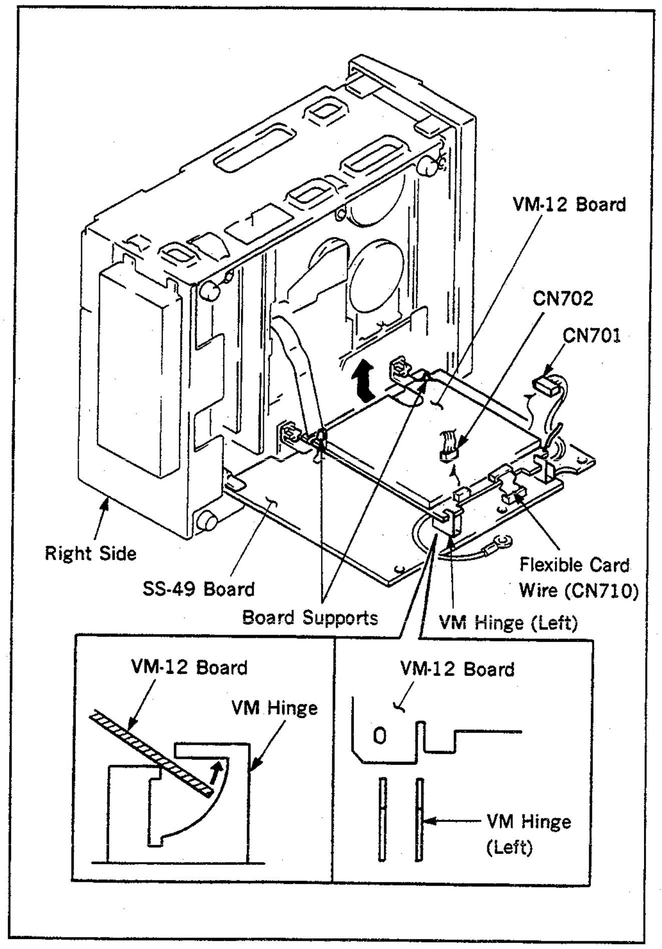
1) Insert the harnesses of connectors CN140 and 142 on the SS-49 board to the wiring holders, then close the wiring holders.
2) Secure the SS-49 board to the three hinges.
3) Connect the three connectors (CN3, 620, 001) to the DR-153 (a), LD-35, CM-14 boards, and secure the harnesses of these connectors with the harness clamps.
   Fix the harness of CN001 to the chassis with the band.
4) Connect all of the connectors and the flexible card wire to the SS-49 board.
   Secure harnesses with the wiring clamps (A101 to 108).
   - The height of the wiring clamp A105 is 10 mm or under.
   - The wiring clamps (A101 to 103) never protrude from the SS-49 board.
5) Install the VM-12 board according sub-section 2-8-7.
6) Close the SS-49 board, and secure three screws.
7) Remove three screws, then open the AU-161 board.
8) Connect two connectors (CN311, 313) to AU-161 board.
9) Close the AU-161 board, and secure three screws.
   - Align the grooves of AU-161 board with grooves of the chassis side when re-installing the AU-161 board.

2-8-7. Removal of the VM-12 board

1. Open the SS-49 board according to sub-section 2-8-5.
2. Disengage harness from wiring clamp in the figure.
3. Disconnect two connectors (CN701 and 702) and the flexible card wire (CN710) from the VM-12 board.
4. Disengage two board supports from the VM-12 board.
5. Remove the VM-12 board in the direction of the arrow.

Precautions for installation.

1) Align the slit of VM-12 board with the right side plate of VM hinge (left).
2) Fix the harness of CN701 with wiring clamp.

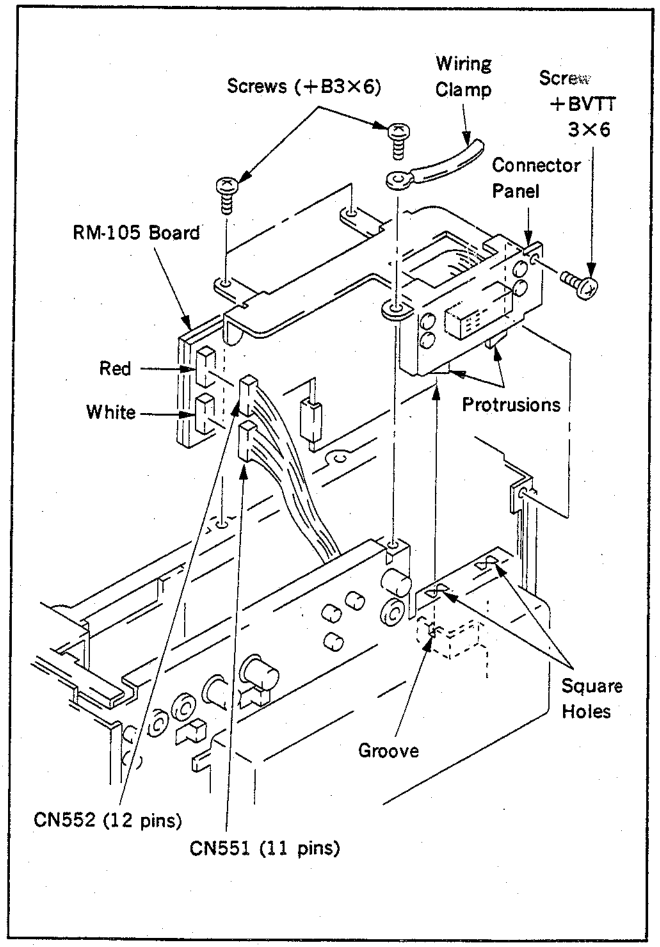

VM-12 Board
CN702
CN701
Right Side
SS-49 Board
Board Supports
Flexible Card Wire (CN710)
VM Hinge (Left)
VM-12 Board
VM Hinge
VM-12 Board
VM Hinge (Left)

2-8-8. Removal of the RM boards (for SVO-9500MD4 Only)

1. Remove the top panel according to sub-section 2-1.
2. Disengage harnesses from wiring clamp in the figure.
3. Remove four screws, and pull up the RM boards.
4. Disconnect two connectors (CN551 and 552) from the RM-105 board.

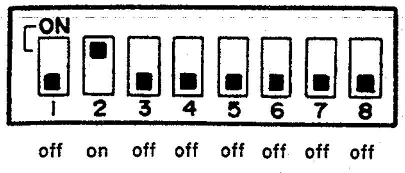
Precautions for installation.

1) Align the RM-105 board with the groove of the chassis (left).
2) Align the two protrusions of connector panel with the square holes of the rear panel.
3) Secure the harnesses of the CN551 and 552 with wiring clamp, and put them into under the connector panel in the figure.


Screws (+B3×6)
Wiring Clamp
Screw +BVTT 3×6
Connector Panel
RM-105 Board
Red
White
Protrusions
Square Holes
Groove
CN552 (12 pins)
CN551 (11 pins)

2-9. DIP SWITCH SETTING

- S101 of SS-49 Board


ON
1 2 3 4 5 6 7 8
off on off off off off off off

(Shipped position)

Function of S101 switches (ON position)

S101-1. Error detection signal muting/tracking control center position detection.
Error detection signal muting : This switch disables error signals of system control block. Even though the machine operation is not stopped due to error detection.
TRACKING VR center position detection : Set the TRACKING control VR position to center. When power is turned on while TP107 and GND are short-circuited, the center position of TRACKING control is stored in the form of DC voltage by microprocessor (IC101/SS-49)

S101-2. Always ON
Noiseless mode

S101-3. Always OFF

S101-4. Always OFF

S101-5. MENU initialize
The content of MENU setting is re-set into the default content of initial setting.

S101-6. Always OFF

S101-7. SERVICE mode (data display mode)
Ordinary maintenance work is done in OFF mode.

S101-8. TOP/END sensor muting
This switch mutes tape top and tape end detection signals.
And disables error signals of reel motion block.

2-10. MEMORY RETENTION FUNCTION OF NOV-RAM (SS-49 BOARD)

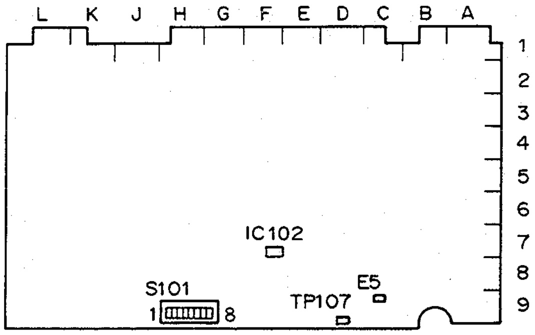
The SS-49 board has NOV-RAM M6M80011AP (IC102) (F-7/F-8) which memorizes the hours meter and menu setting data. If the SS-49 board or the NOV-RAM is replaced, the data set prior to replacement will be lost. It is thus necessary to make the initial settings for the NOV-RAM then perform menu setting once again. In this case, however, the hours meter value will be cleared to zero, and cannot be set again. (If it is necessary to replace a part, it is recommended that you make a record of the data in the memory prior to replacing the part.)

Procedure of initially setting the NOV-RAM (same as factory setting)

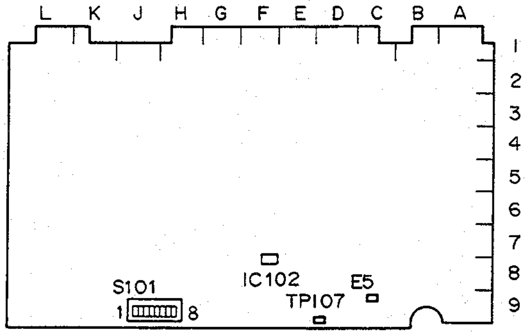
(1) Set No. 1 and No. 5 switches of DIP switch S101 (H-9/J-9) on the SS-49 board to ON.
(2) Short TP107 (D-9/E-9) and E5 (GND) (C-9) on the SS-49 board with the shorting clip.
(3) Turn the TRACKING control on the front panel to the FIXED position, then turn the POWER switch ON.
(4) Wait until the following appears on the display on the front panel.

55XX55

(5) Remove the shorting clip, then set No. 1 and No. 5 switches of S101 to OFF.
(6) Turn the POWER switch OFF.



SS-49 Board Component Side



SS-49 Board Component Side
(Board No. 1-641-575-11)
(SVO-9500MD S/N 10001 to 11620 only)

2-11. HOW TO OPERATE THE CASSETTE COMPARTMENT ASS'Y AND ALSO THE VTR WITHOUT TAPE

(1) Remove the cassette compartment according to sub-section 2-6.

(2) Turn ON No. 8 switch of DIP switch S101/SS board (H-9/J-9). (This is to neutralize the tape top/end sensor function) (Fig. 1)

(3) Push down the CASSETTE DOWN switch with tape, etc. (Fig. 2)

(4) Turn the POWER switch ON.

In this condition, the VTR can be operated from the remote controller (RM-V200, RM-V100, SVRM-100 etc.).

Note : Be sure to turn No. 8 switch OFF after completion of operation.

[Operating the VTR with the cassette compartment removed and a cassette tape loaded]

- Be sure to turn OFF No. 8 switch of DIP switch S101. (If the DIP switch is turned ON, the tape will not stop at the tape top/end, resulting in possible damage to the head tip and deformation of the tape guide.)

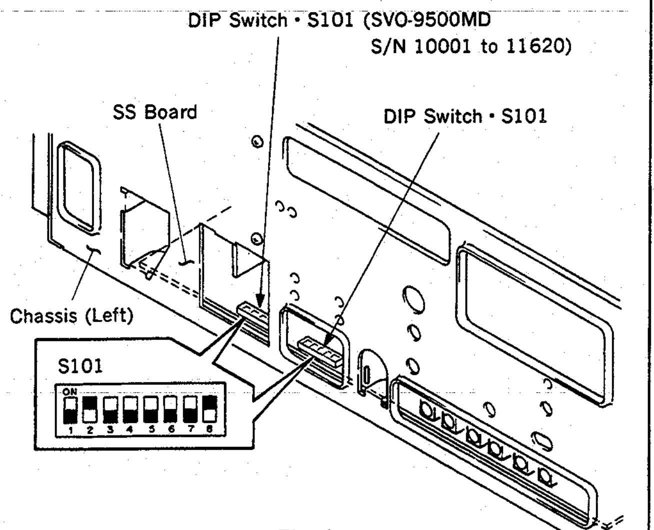

DIP Switch • S101 (SVO-9500MD S/N 10001 to 11620)
SS Board
DIP Switch • S101
Chassis (Left)
S101
ON
1 2 3 4 5 6 7 8

Fig. 1

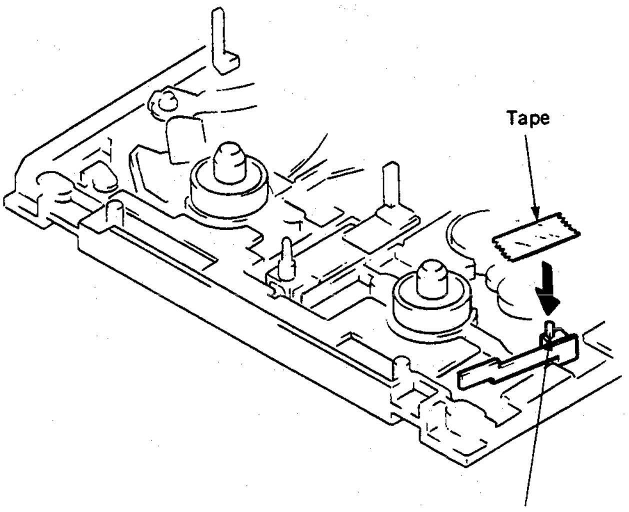

Tape
Cassette Down Switch

Fig. 2

2-12. HOW TO REMOVE CASSETTE TAPE WHEN IT CAN NOT BE EJECTED

1. Remove the top panel and the U case according to sub-section 2-1.
2. Open the SS board according to sub-section 2-8-4.
3. Remove the screw, then remove the cam motor ass'y from the drive gear ass'y. (Fig. 1)
4. Rotate the worm wheel of the drive gear ass'y with the fingers in the direction of the arrow until the tape threading guides are in the unthreading end state. (Fig. 1)
5. Rotate the S side reel motor with the fingers in the direction of the arrow so that the tape is taken up into the cassette. (Fig. 1)
6. Rotate the loading motor of the cassette compartment ass'y with the fingers in the direction of arrow A, and eject the cassette. (Fig. 2)

How to re-install the cam motor ass'y

1) Fit the groove of the cam motor ass'y over the 'a' face of the drive gear ass'y. (Fig. 1)
2) Align the hole in the cam motor ass'y with the projection on the drive gear ass'y. (Fig. 1)
3) Set the cam motor parallel to the 'b' face of the drive gear ass'y, then screw it fixed. (Fig. 3)

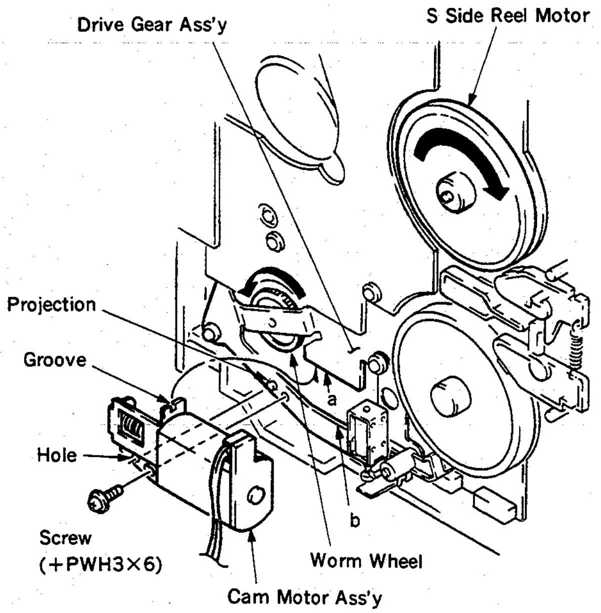

Drive Gear Ass'y
S Side Reel Motor
Projection
Groove
Hole
Screw
(+PWH3×6)
a
b
Worm Wheel
Cam Motor Ass'y

Fig. 1

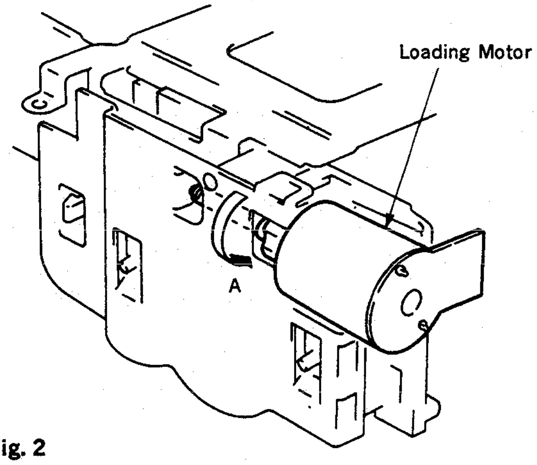

Loading Motor
A

Fig. 2

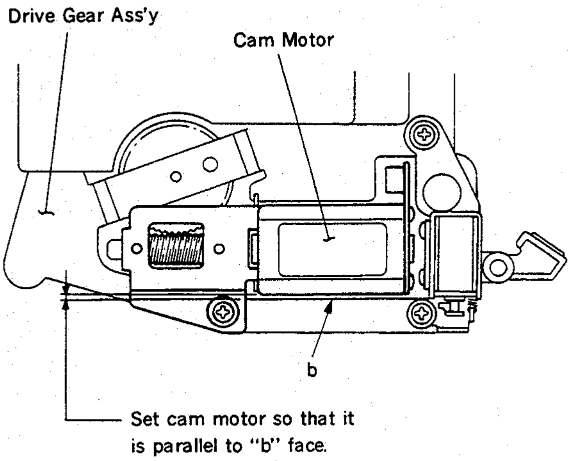

Drive Gear Ass'y
Cam Motor
b
Set cam motor so that it
is parallel to "b" face.

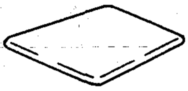
Fig. 3

2-13. FIXTURES

Ref. No	Part No.	Description	For Use
J-1	2-034-697-00	Cleaning Cloth	Cleaning
J-2	9-919-573-01	Cleaning Fluid	Cleaning
J-3	7-700-736-05	L-Shaped Hexagonal Wrench (1.5 mm)	Reel table ass'y replacement
J-4	7-700-736-06	L-Shaped Hexagonal Wrench (0.89 mm)	Guide roller ass'y replacement
J-5	9-911-053-00	Thickness Gauge	Guide roller ass'y replacement
J-6	H-7099-046-H	Alignment Tape, JVC-MH-1 (NTSC)	Switching position adjustment
J-7	8-192-605-11	Alignment Tape, KRV-31NS	Audio alignment (when the KRV-45NS is not available)
J-8	8-192-605-51	Alignment Tape, KRV-35NF	
J-9	8-192-603-91	Alignment Tape, KRV-39NF	Audio alignment
J-10	Pending	Alignment Tape, KRV-45HNS (S-VHS)	Tape run alignment Video alignment
J-11	Pending	Alignment Tape, KRV-45NS (VHS)	Audio alignment Video alignment
J-12	8-192-605-21	Alignment Tape, KRV-51HN (S-VHS)	Tape run alignment, Video alignment (when the KRV-45HNS is not available)
J-13	8-192-605-31	Alignment Tape, KRV-51N (VHS)	Video alignment (when the KRV-45NS is not available)
J-14	8-192-602-48	Alignment Tape, KRV-5821NSA (NTSC)	X Value adjustment, Tracking adjustment Audio Head adjustment
J-15	8-896-024-94	Reference Tape (Blank Tape), GR-120KG (VHS)	Video and Audio alignment
J-16	J-6380-710-A	X Value Adjustment Tool	X Value adjustment
J-17	H-7099-035-H	Torque Gauge Adaptor	S/T Reel table winding torque check
J-18	H-7099-039-H	Torque Gauge	
J-19	J-6380-040-A	RG Reference Pin (1)	Drive gear replacement
J-20	J-6380-050-A	RG Reference Pin (2)	
J-21	J-6380-080-A	Reference Plate	Reel table and tape guide height adj. Audio head azimuth and zenith adj.
J-22	J-6380-090-A	Reel Table Height Adj. Tool	Reel table height adjustment
J-23	J-6380-700-A	Master Block	Tape guide height adjustment Audio head azimuth and zenith adj.
J-24	J-6380-550-A	Master Block	Tape guide height adjustment
J-25	J-6080-840-A	Small Mirror	Tape run alignment
J-26	Standard Products	Tentelometer, T2-H7-UMC	Tape tension adjustment
J-27	Standard Products	Head Degausser	Head degauss
J-28 J-29	J-6082-044-A or J-6080-811-A	Tape Guide Adjustment Screwdriver	Tape guide height adjustment
J-30	7-700-751-02	Box Screwdriver (width 5.5 mm)	Tape run adjustment
J-31	J-6090-014-A or Standard Products	MOLYKOTE Grease EM-30LG MOLYKOTE Grease EM-30L (DOW CORNING Corp.)	Greasing
J-32	J-6381-380-A	S-BNC Video Cable	Video alignment
J-33	J-6381-370-A	RP Extension Tool	Video and Audio alignment
J-34	J-6381-900-A	Y/C Delay Adjustment Tool	Video alignment

NOTE : Require Remote Control Unit RM-V100, RM-V200, or SVRM-100 (option) to moving the VTRs, when you repair this set.

J-1



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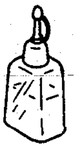
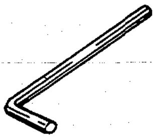


J-3, J-4



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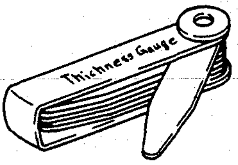
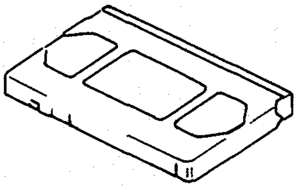

Thickness Gauge

J-6 to 15



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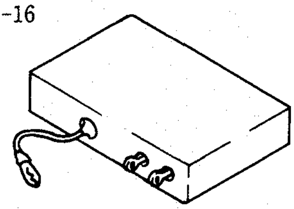

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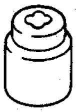

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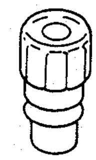

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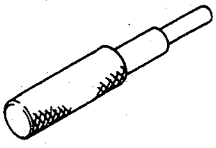

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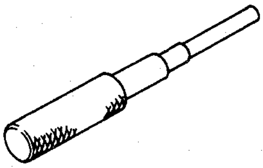

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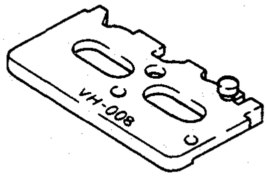

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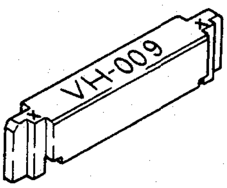

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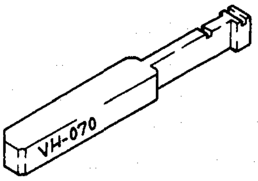

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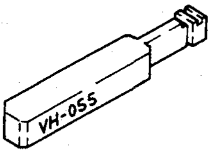

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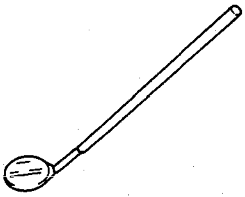

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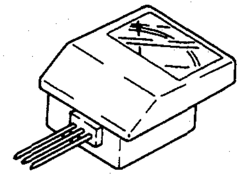

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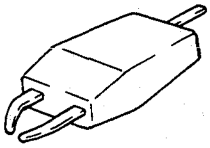

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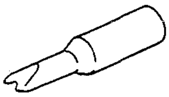
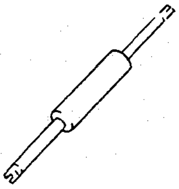


J-29



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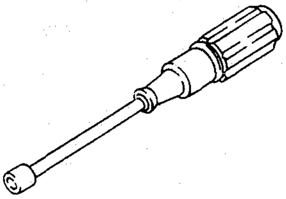

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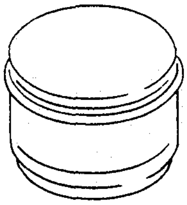

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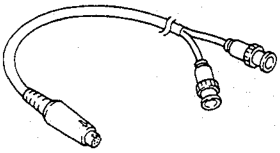
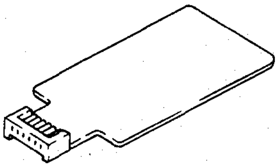
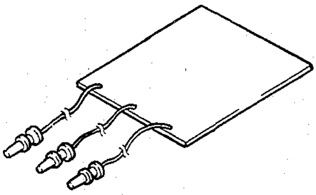


J-33



J-34



2-14. SPARE PARTS

(1) The ⚠ -marked components are critical to safety. Replace only with the same components as specified.

(2) Spare parts supplied from the Sony Parts Center will sometimes have a different shape from the original parts. This is due to the use of improved parts and/or to engineering changes or standardization of genuine parts. This manual's spare parts list indicate the part numbers of the standardized genuine parts in use at present. Regarding parts in our engineering department, refer to Sony service bulletins and service manual supplements.

(3) The parts marked with s in the SP column of spare parts list are normally stocked for replacement purposes. The parts marked with o in the SP column are not normally required for routine service work. Orders for parts marked with **o** will be processed, but allow for additional delivery time.

2-15. REMOVAL/INSTALLATION OF FLEXIBLE CARD WIRE (20P, 26P, 28P)

20P flexible card wire is used on between the SS-49 board and the VM-12 board. 26P flexible card wire is used on between the CR-38 board and the VO-37 board. 28P flexible card wire is used on between the DR-176 board and the SS-49 board. When handling a flexible card wire, be very careful not to bend it because this will markedly reduce its life.

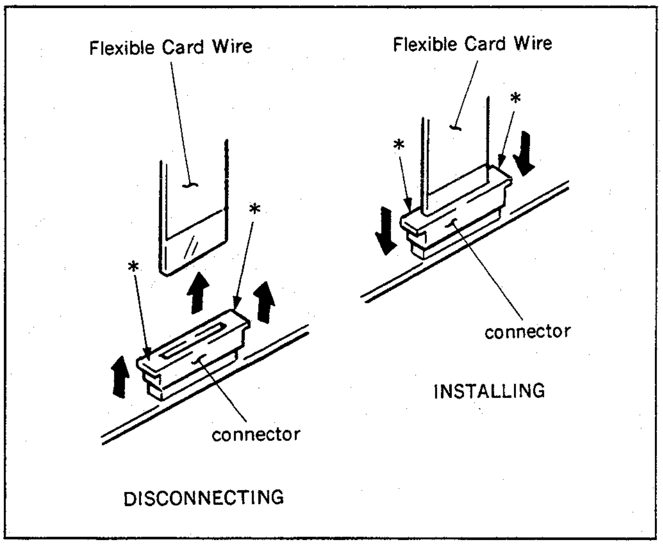
⟨Straight Type⟩

Disconnecting procedure

Pull up the * marked portions of connector, and then pull out the flexible card wire from the connector.

Installing procedure

Install the flexible card wire as far as it will go (up the line indicated on the flexible card wire), and then push down the * marked portions of connector.



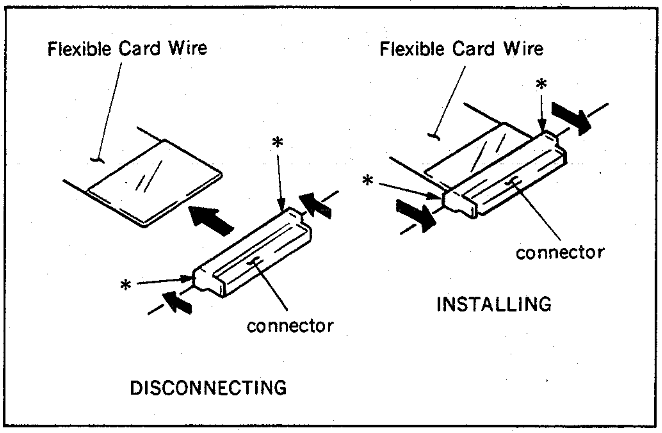
⟨Angle Type⟩

Disconnecting procedure

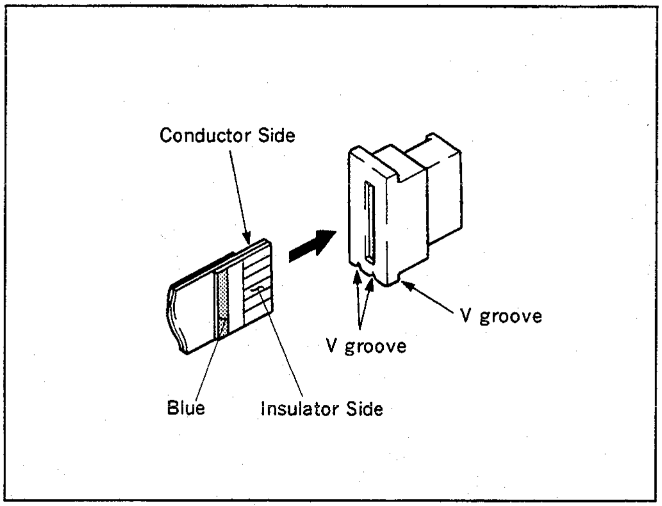
Slide the * marked portions of connector in the direction of the arrow, and then pull out the flexible card wire from the connector.

Installing procedure

Insert the flexible card wire so that is conductor side is facing the printed circuit board, and insert it as far as it will go (up to the line indicated on the flexible card wire). Then slide the * marked portions of connector in the direction of the arrow to lock.



Note : The flexible card wire consists of conductor side and insulator side. The flexible card wire must be inserted with the conductor side facing the correct way. If it is not the circuit will not work.



2-16. REPLACEMENT OF FUSE

Two fuse of the primary side is mounted on the AC-131A board.
Two fuse of the secondary side is mounted on the DC-53 board.
If the fuse has blown first remedy cause of trouble, replace the fuse.

⟨AC-131A board⟩
Remove the AC-131A board. (Refer to sub-section 2-4-1. Note that, there is no need to disconnect the connectors CN1 and 4.) Then remove the fuse cover on the AC-131A board, and replace the fuse.

⟨DC-53 board⟩
- Remove the TR cover, and replace the fuse (F102) of left side.
- Remove the TR cover, then disconnect connector CN101 from the DC-53 board, and replace the fuse (F101) of right side.

(Refer to sub-section 2-7-1.)

2-17. MICROPROCESSOR DATA DISPLAY MODE

The data display mode for service is provided which allows the internal data and the input/output ports status of the microprocessor mounted in the VTR to be displayed on the timer counter unit. In this mode, the operation of the microprocessor and its peripheral circuit can be checked by operting the VTR.
Also, the loading count and hours meter (drum head service time) information provided for maintenance and periodic check can be displayed.
This mode is applicable to the following two boards, each of which is mounted on the SS-49 board.
- IC101 (CXQ80624)
- IC306 (μPD75108CW)

The data display mode offers the 39 different menu items No. 00 to No. 38 losted below.
These data are divided into two types of data : one which displays the internal status of the microprocessor (No. 00, No. 01, No. 13 to No. 22, No. 30 to No. 38) and one which displays the contents of the input/output ports (No. 02 to No. 12, No. 23 to No. 29).

Menu No.	Data Contents (in hexadecimal notation for items other than No. 00 and No. 01)	Microprocessor I/O port	
00	Loading Count (in 0 to 999999 decimal notation)		
01	Total Hours Meter (in 0H to 99999H decimal notation)		
02	Peripheral Block control (1)	IC101	PA0 to PA7
03	Peripheral Block control (2)		PB0 to PB7
04	Peripheral Block control (3)		PC0 to PC3
05	Peripheral Block control (4)		PD0 to PD7
06	Peripheral Block control (5)		PE0 to PE7
07	Peripheral Block control (6)		PF0 to PF7
08	Peripheral Block control (7)		PG0 to PG7
09	Peripheral Block control (8)		PH0 to PH7
10	Peripheral Block control (9)		PI0 to PI4
11	Peripheral Block control (10)		PJ0 to PJ7
12	Peripheral Block control (11)		PK0
13	Mechanism Operation Commands (Output State)		
14	Mechanism Status (Operating State)		
15	Cam Position Status (Loading Position)		
16	Cassette Compartment Position Status		
17	Servo Block Operation Commands (Output State)		
18	Servo Block Status (Operating State)		
19	Drum Servo Mode (Operating State)		
20	Capstan Servo Mode (Operating State)		
21	A/D Data of Tracking Control VR (Front Panel)	IC101	AN0 (Analog Input)
22	A/D Data of Switching Position Adjustment VR (RV102/SS-49 Board)		AN1 (Analog Input)
23	Reel Status (REEL/FG Input)	IC306	P20 to P23, P30 to P33
24	T Reel Torque Position		P40 to P43, P50 to P53
25	S Reel Torque Position in Program Tension Mode		P60 to P63, P70 to P73
26	Reel Control (1), Peripheral Block Control (4) (Brake, Tension)		P80 to P83, P90 to P93
27	Sensor LED Burnout Detection (For Tension Regulator, For Tape Top/End Sensor)		PTH03 to PTH00
28	Reel Control (2), Peripheral Block Control (5) (Non-Interlace Mode, Tension)		P120 to P123, P130 to P133
29	Peripheral Block Control (6) (CTL REC, CNR)		P140 to P143
30	Key Input Status (1)		
31	Key Input Status (2)		
32	Remote Control Key Input Status (1)		
33	Remote Control Key Input Status (2)		
34	Optional Key Input Status (1)		
35	Optional Key Input Status (2)		
36	LED Display Data (1)		
37	LED Display Data (2)		
38	*Aging Mode Activation. Tape Top (PLAY) ⇔ Tape End (REW)		

* For information on Menu No. 38, refer to sub-section 2-17-4.

2-17-1. Activating/Terminating Method and Basic Operations

Preparation

Remove the U case so that the setting of the DIP switch (S101) on the SS-49 board may be changed.
(For information on how to remove the U case, refer to page 2-1.)

Activation

1) Turn ON the section No. 7 of the DIP switch (S101) on the SS-49 board.
2) The Menu No. 00 is displayed on the timer counter unit.

Termination

Turn OFF the section No. 7 of the DIP switch (S101) on the SS-49 board.

Basic Operations

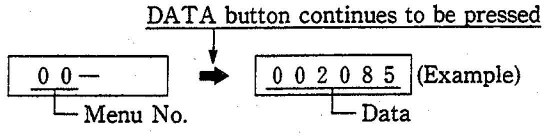
a) Menu Number Selection: ITEM Button
Once the ITEM button on the front panel is pressed, the Menu Number is incremented one. When this button is pressed at No. 38, the Menu Number is returned to No. 00.

b) Data Display at Menu No. 00/No. 01: DATA Button
While the DATA button on the front panel is pressed, the data contents are displayed.
[At any other Menu Number, its data contents are already displayed on the right of the Menu Number Refer to Display Example c).]

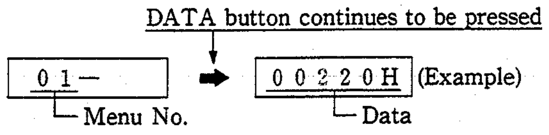
c) Menu Number Reset: RESET Button
When the RESET button on the front panel is pressed, the Menu Number is reset to 00.

2-17-2. Display Data and Explanation Display Examples

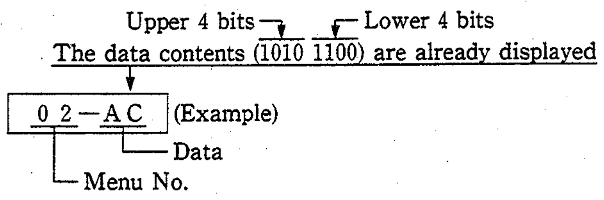
a) Menu No. 00:
The data contents (loading count) are displayed in six decimal numbers.



b) Menu No. 01:
The data contents (hours meter) are displayed in five decimal numbers.



c) Menu No. 02 to No. 38:
The data contents (8-bit data) are displayed in two hexadecimal numbers.



Display to Bit Data

	Upper 4 bits				Lower 4 bits			
Bit Number	7	6	5	4	3	2	1	0
Bit State (Example)	1	0	1	0	1	1	0	0
Display (Example)	A				C			

Correspondence Table of Upper/Lower 4 Bits to Display

4 bits				Display
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7

4 bits				Display
1	0	0	0	8
1	0	0	1	9
1	0	1	0	A
1	0	1	1	B
1	1	0	0	C
1	1	0	1	D
1	1	1	0	E
1	1	1	1	F

2-17-3. Datails of Data Contents

The following describes the data contents of Menu No. 02 to No. 37.
Tables 1 to 4 show the contents of the input/output ports on the IC101/SS-49 board.
Tables 5, 8, and 9 show the internal state of the IC101/SS-49 board.
Tables 6 and 7 show the contents of the input/output ports on the IC306/SS-49 board.
The number encircled presents the pin number.

Table 1 Menu No. 02 and No. 03

Menu No.	Bit No.	Data Contents (In hexadecimal notation unless otherwise noted)	Microprocessor (IC101) I/O port	Connection Companion
02	7	*1 1; AFM REC (Audio FM REC Control)	OUT/PA7 (91)	AU board (Q8) and RP board (IC301 ㉕) (via inverter Q118 on SS board)
		*2 Always "0"	——	
	6	1; NORMAL, 0; AUTO (Shuttle Head AMS Control)	OUT/PA6 (92)	RP board (IC201 ㉘) (via inverter Q117 on SS board)
	5	1; AU REC (CH-1) (Longitude Audio REC Control)	OUT/PA5 (93)	AU board (IC201 ②, IC301 ②, and Q312)
	4	Always "0"	——	
	3	1; AU REC (CH-2) (Longitude Audio REC Control)	OUT/PA3 (95)	Not in use.
	2	*1 Always "0"	——	
		*2 1; FE ON (Flying Erase Head Control)	OUT/PA2 (96)	RP board (Q301)
	1, 0	Always "0"	——	
03	7	0; FWD, 1; REV (Capstan F/R Control)	OUT/PB7 (99)	DR-176 board (Q1) (via switch IC510 on SS board)
	6	Always "0"	——	
	5	1; AUTO, 0; NORMAL (Shuttle Head Control)	OUT/PB5 ①	RP board (IC201 ⑯)
	4	1; LAU SEARCH MODE (Longitude Audio Signal Level Down)	OUT/PB4 ②	AU board (Q203 and Q303), and VM-12 board*3 (D512)
	3	1; LOAD M ON (Loading Motor ON/OFF Control)	OUT/PB3 ③	SS board (IC109 ④)
	2	1; CASSECON M ON (Cassette Compartment Motor ON/OFF Control)	OUT/PB2 ④	SS board (IC109 ⑤)
	1	1; CW, 0; CCW (LOAD/CASSECON Motor Rotational Direction Control)	OUT/PB1 ⑤	SS board (IC109 ⑥)
	0	1; STOP SERVO ON (Capstan Stop Servo Control)	OUT/PB0 ⑥	SS board (Q516)

*1 SVO-9500MD S/N 10001 to 11620 (IC101's version 1. x)
*2 SVO-9500MD S/N 20001 and higher, and SVO-9500MD4. (IC101's version 2. x)
*3 SVO-9500MD: S/N 10001 to 11620 and 20001 to 21200
SVO-9500MD4: S/N 10001 to 12200

Table 2 Menu No. 04 to No. 06

Menu No.	Bit No.	Data Contents (In hexadecimal notation unless otherwise noted)	Microprocessor (IC101) I/O port	Connection Companion
04	7 to 5	Always "0"	——	
	4	Always "1"	——	
	3	Always "1" (NTSC System Select)	IN/PC3 ⑪	SS board (R151 (pull-up))
	2	0 ; VHS CASSETTE, 1 ; S-VHS CASSETTE (S-VHS/N-VHS Cassette Detect)	IN/PC2 ⑫	Mechanism (VHS CASSETTE switch)
	1	0 ; CASSETTE DOWN (Cassette Compartment Down Position Detect)	IN/PC1 ⑬	Mechanism (CASSETTE DOWN switch)
	0	1 ; C-IN, 0 ; MISS REC (Cassette In or Miss REC Detect)	IN/PC0 ⑭	Mechanism (MISS REC switch)
05	7	Normally "1" (OFF) (0 ; Error Detection Signal Muting)	IN/PD7 ㉓	SS board (S101 No. 1 switch)
	6	Normally "0" (ON) (0 ; Noise-less Mode)	IN/PD6 ㉔	SS board (S101 No. 2 switch)
	5	Normally "1" (OFF) (Not in use.)	IN/PD5 ㉕	SS board (S101 No. 3 switch)
	4	Normally "1" (OFF) (Reserved)	IN/PD4 ㉖	SS board (S101 No. 4 switch)
	3	Normally "1" (OFF) (0 ; MENU Initialize)	IN/PD3 ㉗	SS board (S101 No. 5 switch)
	2	Normally "1" (OFF) (Not in use)	IN/PD2 ㉘	SS board (S101 No. 6 switch)
	1	Normally "1" (OFF)*4 (Microcomputer Data Display Mode)	IN/PD1 ㉙	SS board (S101 No. 7 switch)
	0	Normally "1" (OFF) (0 ; TOP/END Sensor Muting)	IN/PD0 ㉚	SS board (S101 No. 8 switch)
06	7	1 ; NORMAL, 0 ; CHIP SELECT (NON-VOL RAM Control)	OUT/PE7 (71)	SS board (IC102 ① and ⑥)
	6	Always "1"	——	
	5	0 ; AFM MUTE (Audio FM Signal Mute Control)	OUT/PE5 (73)	AU board (IC2 ⑬) (via inverter Q5 on AU board)
	4	1 ; CAPSTAN PULSE DRIVE MODE (Capstan Motor Control)	OUT/PE4 (74)	SS board (Q108)
	3, 2	Always "0"	——	
	1	Usually "1", sometimes "0" at CTL counting (Count CTL Level)	IN/PE1 (77)	SS board (IC512 ④) (via converter IC504 (1/6) on SS board)
	0	Always "1"	——	

*4 Always "0" in the microcomputer data display mode.

Table 3 Menu No. 07 to No. 09

<table>
<tr><th>Menu No.</th><th>Bit No.</th><th>Data Contents
(In hexadecimal notation unless otherwise noted)</th><th>Microprocessor (IC101) I/O port</th><th>Connection Companion</th></tr>
<tr><td rowspan="4">07</td><td>7</td><td rowspan="4">Decoder Control (In most case, ' 3 ' or ' b ' are displayed)
<table>
<tr><th colspan="4">Bit</th><th rowspan="2">Function</th></tr>
<tr><th>7</th><th>6</th><th>5</th><th>4</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td>KY Board Select</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td>Reel Servo Micon Reset</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>Indicater Unit I/F Enable</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>1</td><td>CNR (VM Board) Select</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>0</td><td>VISS Select</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>1</td><td>Option Unit Select</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>X</td><td>Not in use</td></tr>
<tr><td>1</td><td>X</td><td>X</td><td>X</td><td>Disable Decoder</td></tr>
</table></td><td>IN/PF7 ㊽</td><td>SS board (IC114 ④ and ⑤)</td></tr>
<tr><td>6</td><td>IN/PF6 ㊾</td><td>SS board (IC114 ③)</td></tr>
<tr><td>5</td><td>IN/PF5 ㊿</td><td>SS board (IC114 ②)</td></tr>
<tr><td>4</td><td>IN/PF4 (51)</td><td>SS board (IC114 ①)</td></tr>
<tr><td></td><td>3</td><td>Always "1"</td><td>——</td><td></td></tr>
<tr><td></td><td>2</td><td>CAM MODE 3
(Mechanical Cam Mode Position Detect)</td><td>IN/PF2 (56)</td><td>DR-167 board (IC2 ③)
(via inverter Q119 on SS board)</td></tr>
<tr><td></td><td>1</td><td>CAM MODE 2
(Mechanical Cam Mode Position Detect)</td><td>IN/PF1 (57)</td><td>DR-167 board (IC3 ③)
(via inverter Q116 on SS board)</td></tr>
<tr><td></td><td>0</td><td>CAM MODE 1
(Mechanical Cam Mode Position Detect)</td><td>IN/PF0 (58)</td><td>DR-167 board (IC4 ③)
(via inverter Q107 on SS board)</td></tr>
<tr><td>08</td><td>7</td><td>1 ; 1ST FIELD WRITE
(1st Field Freeze Control)</td><td>IN/PG7 (63)</td><td>VM board (IC200 ㉜ or IC253 ⑧)
(via selector IC257 on VM board)</td></tr>
<tr><td></td><td>6</td><td>Normally "1", 0 ; L-ADJ
(NON-VOL RAM Initialize Control)</td><td>IN/PG6 (64)</td><td>SS board (TP107)</td></tr>
<tr><td></td><td>5</td><td>Always "1" (Factory use)</td><td>IN/PG5 (65)</td><td>SS board (TP106, R153 (pull-up))</td></tr>
<tr><td></td><td>4</td><td>SYNC (SYNC Pulse)
(SYNC Pulse In)</td><td>IN/PG4 (66)</td><td>SS board (IC111 ⑮)</td></tr>
<tr><td></td><td>3</td><td>PBCTL (PB CTL Pulse)
(Servo Input Control)</td><td>IN/PG3 (67)</td><td>DUS-534 or SS board (IC500 ⑱)</td></tr>
<tr><td></td><td>2</td><td>DPG (Drum PG Pulse)
(Servo Input Control)</td><td>IN/PG2 (68)</td><td>SS board (IC707 ⑦)
(via TP104 on SS board)</td></tr>
<tr><td></td><td>1</td><td>DFG (Drum FG Pulse)
(Servo Input Control)</td><td>IN/PG1 (69)</td><td>DR-167 board (IC1 ⑰)
(via amp. Q114 and TP113 on SS board)</td></tr>
<tr><td></td><td>0</td><td>CFG (Capstan FG Pulse)
(Servo Input Control)</td><td>IN/PG0 (70)</td><td>SS board (TP103, IC513 ①)
(via D509 on SS board)</td></tr>
<tr><td>09</td><td>7, 6</td><td>Always "0"</td><td>——</td><td></td></tr>
<tr><td></td><td>5</td><td>0 ; REC STANDBY
(REC 9V Control of VO and RP Boards)</td><td>OUT/PH5 ㉝</td><td>VO board (Q14)</td></tr>
<tr><td></td><td>4</td><td>1 ; VIDEO MUTE
(Video Signal Mute Control)</td><td>OUT/PH4 ㉞</td><td>VO board (IC402 ④ and IC407 ④)</td></tr>
<tr><td></td><td>3</td><td>0 ; VIDEO PB, 1 ; VIDEO E-E
(Video and AFM PB/EE Control)</td><td>OUT/PH3 ㉟</td><td>AU board (IC1 ⑱, IC2 ⑯, and Q10) and VO board (IC101 ㊳, IC202 ⑭, Q13, Q201, IC403 ④, IC405 ④, Q41, and Q314)</td></tr>
<tr><td></td><td>2</td><td>0 ; LAU PB, 1 ; LAU E-E
(Longitude Audio (CH-1) PB/EE Control)</td><td>OUT/PH2 ㊱</td><td>AU board (IC201 ⑭, IC301 ⑭, Q201, and Q211)</td></tr>
<tr><td></td><td>1</td><td>0 ; LAU PB, 1 ; LAU E-E
(Longitude Audio (CH-2) PB/EE Control)</td><td>OUT/PH1 ㊲</td><td>Not in use</td></tr>
<tr><td></td><td>0</td><td>1 ; AUDIO MUTE
(Audio Mute Control)</td><td>OUT/PH0 ㊳</td><td>AU board (IC201 ⑫, IC301 ⑫, and Q314)</td></tr>
</table>

Table 4 Menu No. 10 to No. 12

Menu No.	Bit No.	Data Contents (In hexadecimal notation unless otherwise noted)	Microprocessor (IC101) I/O port	Connection Companion
10	7 to 5	Always "0"	—	
	4	0 ; CAPSTAN FWD (Capstan FWD Rotation Detect)	IN/PI4 (82)	SS board (IC508 ②)
	3	Normally "1", 0 ; NOV-RAM BUSY (NON-VOL RAM Busy)	IN/PI3 (83)	SS board (IC102 ⑦)
	2	0 ; S-VHS, 1 ; N-VHS (Video Mode Control)	OUT/PI2 (84)	VO board (Q10)
	1	Normally "0", 1 ; FULL ERASE ON (Full Erase Head Bias OSC Control)	OUT/PI1 (85)	Not in use
	0	Normally "1", 0 ; HOURS METER RESET (Hours Meter Reset Control)	IN/PI0 (86)	SS board (TP121)
11	7	1 ; S-VHS DETECT (PB Video Mode Detect)	IN/PJ7 ⑮	RP board (IC302 ⑤) (via Q313 and Q314 on RP board)
	6	0 ; INCOME-VIDEO DETECT (Video Input Detect)	IN/PJ6 ⑯	SS board (IC113 ⑥) (via inverter Q121 on SS board)
	5	0 ; REF VIDEO DETECT (External Reference Video Input Detect)	IN/PJ7 ⑰	Not in use
	4	CNR SYNC SELECT (Input SYNC Select) Bit 4 3 — SYNC 1 X — CNR SYNC 0 1 — REF SYNC 0 0 — INCOME	OUT/PJ4 ⑱	SS board (IC111 ⑩)
	3		OUT/PJ3 ⑲	SS board (IC111 ⑪)
	2	Normally "0", 1 ; EMPTY OF VM BOARD (VM Board Connection Detect)	IN/PJ2 ⑳	VM board (GND)
	1	OPTION SELECT (Optional Unit Connection Condition Detect) Bit 1 0 — Optional Unit 1 1 — Empty 1 0 — 33/34 Pins 0 1 — RS-232C 0 0 — RS-422	IN/PJ1 ㉑	Optional unit (GND or OPEN) 33-pin interface board : SVBK-100 33-pin interface board : SVBK-110 RS-232C interface board : SVBK-120 RS-422 interface board : Unusable unit
	0		IN/PJ0 ㉒	
12	7 to 1	Always "0" (Not in use)	—	
	0	0 ; HUMID (Dew Detect)	IN/PK0 (87)	DEW SENSOR (via driver (Q120, and 128 to 131) on SS board)

Table 5 Menu No. 13 to No. 22

Menu No.	Bit No.	Data Contents (In hexadecimal notation unless otherwise noted)
13	—	Mechanism operation command output state indication 01; EJECT, 02; STOP, 03; FF, 04; REW, 10; PLAY/REC, 20; PAUSE, 25; LPAUSE, 30; FWD SEARCH, 40; REW SEARCH
14	—	Mechanism operational status indication 01; EJECT, 02; STOP, 03; FF, 04; REW, 05; LOADING/UNLOADING, 06; FRUNTH, 10; PLAY/REC, 20; PAUSE, 25; LPAUSE, 30; FWD SEARCH, 40; REW SEARCH
15	—	Mechanism activity state indication (following by MENU no. 07 bits 2 to 0) 80; PINCH ON, 40; Transition PINCH ON and THREADING-END, 20; THREADING-END, 10; BRAKE MODE, 08; Transition BRAKE MODE and FR STOP, 04; FR STOP, 02; Transition FR STOP and UNTHREADING-END, 01; UNTHREADING-END
16	—	Cassette status indication
	7	1; CASSETTE DOWN NG
	6, 5	Always "0" (Not in use)
	4	1; CASSETTE EXIST
	3	0; TAPE END DETECT
	2	0; TAPE TOP DETECT
	1	0; CASSETTE DOWN SW ON
	0	1; CASSETTE IN, 0; MISS REC SW ON
17	—	Capstan/drum servo operation command output state indication
	7	SERVO DIRECTION (0; REW, 1; FWD)
	6	Always "0" (Not in use)
	5	1; PLAY MODE
	4	1; REC MODE
	3	1; PAUSE MODE
	2	1; SEARCH MODE
	1	1; ×5VV SEARCH MODE (Total tape volume estimation mode)
	0	1; SERVO ENABLE
18	—	Capstan/drum servo operational status indication
	7	1; CTL EXIST
	6	1; VIDEO IN DETECT
	5	1; CTL EXIST
	4	1; NOISELESS STILL
	3	1; CAPSTAN STOP
	2	1; DRUM STOP
	1	1; CAPSTAN LOCK
	0	1; DRUM LOCK
19	—	Drum servo mode state indication 00; OFF MODE, 01; REC/PLAY MODE, 02; AFC MODE, 03; STEP SLOW MODE
20	—	Capstan servo mode state indication 00; OFF MODE, 01; REC MODE, 02; PLAY MODE, 03; PINCH OFF MODE, 04; NOISELESS MODE, 05; SYNCHRO MODE, 06; STEP SLOW MODE, 07; SEARCH MODE
21	—	TRACKING control VR position state indication (Data value at VR's mechanical center is 80 ±10) Analog In; AN0 (IC101 (62))
22	—	Switching position VR (RV102/SS board) position state indication Analog In; AN1 (IC101 (61))

Table 6 Menu No. 23 to No. 26

Menu No.	Bit No.	Data Contents (In hexadecimal notation unless otherwise noted)	Microprocessor (IC306) I/O port	Connection Companion
23	7 to 4	Always "0" (when inserted the cassette, ' 1 ' (0001) is displayed for a moment.)		
	3	0 ; T-REEL REV, 1 ; T-REEL FWD (Take-up Reel Rotational Direction Status)	IN/P23 ⑪	DUS-445 board (IC307 ②)
	2	0 ; T-REEL STOP, 1 ; T-REEL ROTATE (Take-up Reel Stop/Rotate Status)	IN/P22 ⑫	DUS-445 board (IC308 ⑥)
	1	0 ; S-REEL REV, 1 ; S-REEL FWD (Supply Reel Rotational Direction Status)	IN/P21 ⑬	DUS-445 board (IC307 ⑫)
	0	0 ; S-REEL STOP, 1 ; S-REEL ROTATE (Supply Reel Stop/Rotate Status)	IN/P20 ⑭	DUS-445 board (IC308 ⑩)
24	—	Take-up reel torque level data state indication		
	7	D-A Data Bit 3	OUT/P53 ㊶	SS board (IC302 ⑤) (via D-A resisters R442 to 457 on SS board)
	6	D-A Data Bit 2	OUT/P52 ㊷	
	5	D-A Data Bit 1	OUT/P51 ㊸	
	4	D-A Data Bit 0 (LSB)	OUT/P50 ㊹	
	3	D-A Data Bit 7 (MSB)	OUT/P43 ㊲	
	2	D-A Data Bit 6	OUT/P42 ㊳	
	1	D-A Data Bit 5	OUT/P41 ㊴	
	0	D-A Data Bit 4	OUT/P40 ㊵	
25	—	Supply reel program torque level data state indication		
	7	D-A Data Bit 3	OUT/P73 (52)	SS board (IC301 ③) (via D-A resisters R426 to 441 on SS board)
	6	D-A Data Bit 2	OUT/P72 (53)	
	5	D-A Data Bit 1	OUT/P71 (54)	
	4	D-A Data Bit 0 (LSB)	OUT/P70 (55)	
	3	D-A Data Bit 7 (MSB)	OUT/P63 ㊽	
	2	D-A Data Bit 6	OUT/P62 ㊾	
	1	D-A Data Bit 5	OUT/P61 ㊿	
	0	D-A Data Bit 4	OUT/P60 (51)	
26	7	0 ; CAPSTAN CORRECT ENABLE (Reel Transient Correction)	OUT/P93 (60)	SS board (Q350)
	6	0 ; PINCH ON (PINCH Solenoid Control)	OUT/P92 (61)	SS board (PINCH SOLENOID DRIVER ; Q349), and Option board
	5	Always "0" (Not in use)	OUT/P91 (62)	SS board (Q336) : Not in use.
	4	0 ; T-BRAKE OFF, 1 ; T-BREAK ON (Take-up Reel Break Solenoid Control)	OUT/P90 (63)	SS board (T BREAK SOLENOID DRIVER ; Q302)
	3	0 ; STILL TENSION (Still Tension VR Select)	OUT/P83 (56)	SS board (IC314 ⑩) (via switch Q333 on SS board)
	2	0 ; T-REEL FWD, 1 ; T-REEL REV (Take-up Reel Control Command)	OUT/P82 (57)	DR-153 (a) board (IC1 ⑨) (via inverter Q320 on SS board)
	1	0 ; S-REEL FWD, 1 ; S-REEL REV (Supply Reel Control Command)	OUT/P81 (58)	DR-153 (b) board (IC1 ⑨) (via inverter Q321 on SS board)
	0	0 ; BREAK OFF, 1 ; BREAK ON (Break Solenoid CControl)	OUT/P80 (59)	SS board (BREAK SOLENOID DRIVER ; Q332)

Table 7 Menu No. 27 to No. 29

Menu No.	Bit No.	Data Contents (In hexadecimal notation unless otherwise noted)	Microprocessor (IC306) I/O port	Connection Companion
27	7 to 4	Always "0" (Not in use)	——	
	3	Normally "1", 0 ; TRQ ADJ (Torque Adjustment Mode)	IN/PTH03 ⑤	SS board (TP304, R399 (pull-up))
	2	Always "0" (Not in use)	IN/PTH02 ⑥	SS board (GND)
	1	Always "1" ; TEN-REG LED BROKEN (Tension Regulator LED Broken Detect)	IN/PTH01 ⑦	LE-86 board (D1)
	0	1 ; TOP/END LED BROKEN (Top/End LED Broken Detect)	IN/PTH00 ⑧	LE-80 board (D1) (via switch Q331 on SS board)
28	7	Always "0" (Not in use)	OUT/P133 ㉓	
	6	Always "0" (Not in use)	OUT/P132 ㉔	
	5	1 ; NON-INTERRACE (Non-interrace Control)	OUT/P131 ㉕	VM board[*5] (IC801 ⑩)
	4	0 ; FWD TENSION, 1 ; REV TENSION (Tension VR F/R Select)	OUT/P130 ㉖	SS board (IC314 ⑨) (via switch Q301 on SS board)
	3	0 ; TOP/END LED ON (Top/End LED Control)	OUT/P123 ⑲	SS board (Q331)
	2	1 ; TEN-REG CHARGE CLEAR (Tension Regulator Charge Clear Control)	OUT/P122 ⑳	SS board (Q303)
	1	0 ; TEN-REG ON, 1 ; PROGRAM TENSION (Supply Reel Tension Mode Select)	OUT/P121 ㉑	SS board (IC315 ⑪)
	0	0 ; TORQUE, 1 ; SPEED (Reel Control Mode)	OUT/P120 ㉒	SS board (IC303 ⑨ to ⑪) (via inverter Q351 on SS board)
29	7 to 4	Always "0" (Not in use)	——	
	3	Always "1" (Not in use)	OUT/P143 ㉗	
	2	Always "1" (Not in use)	OUT/P142 ㉘	
	1	1 ; CTL REC MUTE (CTL REC Muting Control)	OUT/P141 ㉙	DUS-534 or SS board (IC500 ⑥) (via Q515 on DUS-534 or SS board)
	0	1 ; CNR OFF (VM Board Disable Control)	OUT/P140 ㊴	Not in use.

[*5] SVO-9500MD : S/N 21201 and higher
SVO-9500MD4 : S/N 12201 and higher

Table 8 Menu No. 30 to No. 35

<table>
<tr><th>Menu No.</th><th>Bit No.</th><th>Data Contents (In hexadecimal notation unless otherwise noted)</th><th>Microprocessor (IC101) I/O port</th><th>Connection Companion</th></tr>
<tr><td rowspan="5">30</td><td>7</td><td>1; STOP KEY ON</td><td rowspan="5">IN/SI0 ㊺
(Input as serial data)</td><td rowspan="5">KY board (IC101 ㉞)</td></tr>
<tr><td>6</td><td>1; EJECT KEY ON</td></tr>
<tr><td>5</td><td>1; F FWD KEY ON</td></tr>
<tr><td>4</td><td>1; REW KEY ON</td></tr>
<tr><td>3 to 0</td><td>Always "0" (Not in use)</td></tr>
<tr><td rowspan="7">31</td><td>7</td><td>1; RESET KEY ON[*4]</td><td rowspan="7">IN/SI0 ㊺
(Input as serial data)</td><td rowspan="7">KY board (IC101 ㉞)</td></tr>
<tr><td>6</td><td>1; REC KEY ON</td></tr>
<tr><td>5, 4</td><td>Always "0" (Not in use)</td></tr>
<tr><td>3</td><td>1; PAUSE KEY ON</td></tr>
<tr><td>2</td><td>1; PLAY KEY ON</td></tr>
<tr><td>1</td><td>1; FWD SEARCH KEY ON[*4]</td></tr>
<tr><td>0</td><td>1; REV SEARCH KEY ON[*4]</td></tr>
<tr><td rowspan="5">32</td><td>7</td><td>1; REMOTE STOP IN</td><td rowspan="5">IN/SI0 ㊺
(Input as serial data)</td><td rowspan="5">KY board (IC101 ㉞)
(Serial data from Remote Control Unit inputs to IC101 ㊴ on KY board from front panel's REMOTE connector via Q101 on KY board)</td></tr>
<tr><td>6</td><td>1; REMOTE EJECT IN</td></tr>
<tr><td>5</td><td>1; REMOTE F FWD IN</td></tr>
<tr><td>4</td><td>1; REMOTE REW IN</td></tr>
<tr><td>3 to 0</td><td>REMOTE SHUTTLE SPEED
<table>
<tr><td>Indication Value</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr>
<tr><td>Speed (times)</td><td>0.03</td><td>0.1</td><td>0.2</td><td>0.5</td><td>1.0</td><td>2.0</td><td>5.0</td><td>10</td></tr>
</table></td></tr>
<tr><td rowspan="7">33</td><td>7</td><td>Always "0" (Not in use)</td><td rowspan="7">IN/SI0 ㊺
(Input as serial data)</td><td rowspan="7">KY board (IC101 ㉞)
(Serial data from Remote Control Unit inputs to IC101 ㊴ on KY board from front panel's REMOTE connector via Q101 on KY board)</td></tr>
<tr><td>6</td><td>1; REMOTE REC IN</td></tr>
<tr><td>5, 4</td><td>Always "0" (Not in use)</td></tr>
<tr><td>3</td><td>1; REMOTE PAUSE IN</td></tr>
<tr><td>2</td><td>1; REMOTE PLAY IN</td></tr>
<tr><td>1</td><td>1; REMOTE SHUTTLE IN</td></tr>
<tr><td>0</td><td>1; REMOTE SHUTTLE FWD IN
0; REMOTE SHUTTLE REV IN</td></tr>
<tr><td rowspan="5">34</td><td>7</td><td>1; OPTION STOP IN</td><td rowspan="5">IN/SI0 ㊺
(Input as serial data)</td><td rowspan="5">OPTION board
33-pin interface board: SVBK-100
34-pin interface board: SVBK-110
RS-232C interface board: SVBK-120</td></tr>
<tr><td>6</td><td>1 OPTION EJECT IN</td></tr>
<tr><td>5</td><td>1 OPTION F FWD IN</td></tr>
<tr><td>4</td><td>1 OPTION REW IN</td></tr>
<tr><td>3 to 0</td><td>OPTION SHUTTLE SPEED
<table>
<tr><td>Indication Value</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr>
<tr><td>Speed (times)</td><td>0.03</td><td>0.1</td><td>0.2</td><td>0.5</td><td>1.0</td><td>2.0</td><td>5.0</td><td>10</td></tr>
</table></td></tr>
<tr><td rowspan="7">35</td><td>7</td><td>Always "0" (Not in use)</td><td rowspan="7">IN/SI0 ㊺
(Input as serial data)</td><td rowspan="7">OPTION board
33-pin interface board: SVBK-100
34-pin interface board: SVBK-110
RS-232C interface board: SVBK-120</td></tr>
<tr><td>6</td><td>1 OPTION REC IN</td></tr>
<tr><td>5, 4</td><td>Always "0" (Not in use)</td></tr>
<tr><td>3</td><td>1; OPTION PAUSE IN</td></tr>
<tr><td>2</td><td>1; OPTION PLAY IN</td></tr>
<tr><td>1</td><td>1; OPTION SHUTTLE IN</td></tr>
<tr><td>0</td><td>1; OPTION SHUTTLE FWD IN
0; OPTION SHUTTLE REV IN</td></tr>
</table>

[*4] Always "0" in the microcomputer data display mode.

Table 9 Menu No. 36 and No. 37

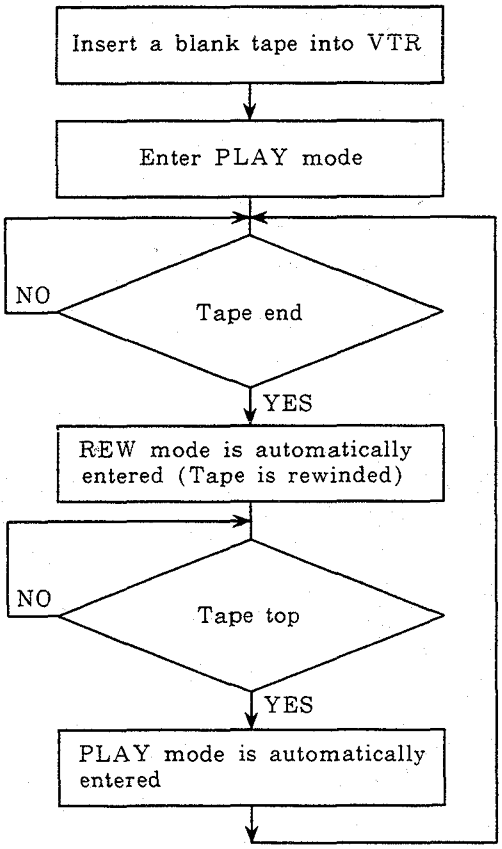
Menu No.	Bit No.	Data Contents (In hexadecimal notation unless otherwise noted)	Microprocessor (IC101) I/O port	Connection Companion
36	7, 6	(Not in use)	OUT/SO0 ㊻	KY board (IC101 ㉝)
	5	1 ; F FWD LED ON	(Output as serial data)	
	4	1 ; REW LED ON		
	3 to 0	Always "0" (Not in use)		
37	7	Always "0" (Not in use)	OUT/SO0 ㊻	KY board (IC101 ㉝)
	6	1 ; REC LED ON	(Output as serial data)	
	5, 4	Always "0" (Not in use)		
	3	1 ; PAUSE LED ON		
	2	1 ; PLAY LED ON		
	1	1 ; FWD SEARCH LED ON		
	0	1 ; REV SEARCH LED ON		

2-17-4. Aging Mode

When Menu No. 38 is selected, the VTR enters the aging mode.
However, only setting the Menu Number to 38 will have no effect.
For the operating procedure, refer to the flowchart shown below.
The displayed data will not be affected when the aging mode is executed.

Caution : NEVER perform aging if not needed.
This will result in damaged head and deteriorated life, as well as adverse effects on ohter portions.

Aging Mode Sequence


Insert a blank tape into VTR
Enter PLAY mode
NO
Tape end
YES
REW mode is automatically entered (Tape is rewinded)
NO
Tape top
YES
PLAY mode is automatically entered

2-18. ERROR CODES

This set provides an error display function that displays the error if a trouble condition occurs.
When a failure is detected in the normal operating state, the error is immediately displayed on the time counter display at the front.
In most cases, when an error occurs, the system enters the protective action and stops to operate.
Each error is displayed by its error code and the current operating state at the occurrence of the error is displayed by its sub error code.
The contents of the error codes are given below.
Note that to display the sub error code, press the DATA button.

Error code list

Error code	Sub error code	Contents	Error detecting method	Possible failure
Err-01		No reel rotation/reel stoppage • The reel motor would not operate for a specific time in the reel operation mode, the tape protective action was executed.	The rotational speed obtained from the FG output of Supply or Takeup reel motor is zero for a specific time.	• Cut or coiling tape • Improper operation of RVS guide • Improper operation of tension regulator assembly (TG-2 guide) • Faulty circuit in tension sensor system • Poor adjustment of tape tension/torque • Malfunction of capstan motor • Malfunction of pinch solenoid • Improper operation of pinch roller block assembly • Improper operation of LBD brake • Faulty circuit in reel FG system • Malfunction of S/T reel motor • Break or poor connection of harness • Improper operation of reel brake • Faulty circuit in tape top/end sensor system (when an error occurred at tape top/end.)
		Incorrect direction of reel rotation • The reel motor was rotating in an incorrect direction for a specific time in the reel operation mode; the tape protective action was executed.	The direction of reel rotation obtained from the FG output of Supply or Takeup reel motor is incorrect for a specific time.	
	06 .... 09 .... 0A	Failure detected in F FWD/REV mode. Failure detected in search mode. Failure detected in playback/record mode.		
Err-03	00	No capstan rotation • The capstan motor would not operate for a specific time; the tape protective action was executed.(*1)	The rotational speed obtained from the FG output of capstan motor is zero for a specific time.	• Poor adjustment of capstan FG duty ratio • Malfunction of capstan motor • Faulty circuit in capstan FG system • Break or poor connection of harness
		No capstan servo operation • The capstan servo would not operate for a specific time; the tape protective action was executed.	The rotational speed obtained from the FG output of capstan motor is not locked within a specific time.	

*1 ; If the capstan won't rotate in the playback/record mode or if the capstan stops on the way in the playback/record/search mode, the system will first of all detect the condition that Takeup reel won't rotate or stops and Err-1 be activated.

Error code	Sub error code	Contents	Error detecting method	Possible failure
Err-04	00	No drum rotation/drum stoppage • The drum motor would not rotate for a specific time in the drum rotation mode ; the tape protective action was executed.	The rotational speed obtained from the FG output of drum motor is less than the specified value for a specific time.	• Tape coiling around drum • Break or poor connection of harness • Malfunction of drum motor • Faulty circuit in drum FG/PG system
		No drum servo operation • The drum servo would not operate within a specific time in the record mode ; the tape protective action was executed.	With servo reference locked, the rotational speed from the FG output of drum motor and the phase of rotation from the PG output are not locked within a specific time.	
Err-05		Incorrect increase of reel rotational speed • The rotational speed of reel motor became incorrectly faster in the reel operation mode ; the tape protective action was executed.(*2)	The rotational speed obtained from the FG output of reel motor is more than the specified value for a specific time.	• Cut tape • Looseness of set screws for securing the reel base assembly • Damaged reel base assembly
	00	Failure detected in PAUSE mode.		
	06	Failure detected in F FWD/REW mode.		
	07	Failure detected in unthreading.		
	09	Failure detected in search mode.		
	0A	Failure detected in playback/record mode.		

Error code	Sub error code	Contents	Error detecting method	Possible failure
Err-20	Unable to display	See Err-23[*5]		
	02....	**Failure in threading operation** • The threading operation was not completed within a specific time; the operation was stopped. (switch from threading end state to STOPped state) (switch from STOPped state to unthreading end state)	The threading operation was not completed in a specific time after commanded by system microcomputer.	• Damaged projection of BC roller assembly • Failure in reel motor brake operation • Malfunction of loading motor • Improper gear position of loading unit • Improper detection by cam mode sensor • Break or poor connection of harness
	03....	**Failure in unthreading operation** • The unthreading operation was not completed within a specific time; the operation was stopped. (switch from unthreading end state to STOPped state) (switch from STOPped state to threading end state)	The unthreading operation was not completed in a specific time after commanded by system microcomputer.	
	05.... (06)[*4]	**Failure of cassette compartment operation** • The cassette up/down operation was not completed within a specific time; the operation was stopped.	The cassette up/down operation was not completed in a specific time after commanded by system microcomputer.	• Malfunction of cassette compartment motor • Improper operation of cassette compartment • Malfunction of cassette in/miss REC switch • Malfunction of cassette down switch • Break or poor connection of harness
	06....	**Reel motor won't stop** • When the mode is switched from F FWD/REW to STOP mode, the reel motor would not stop within a specific time; the protective action was executed.[*2]	The rotational speed obtained from the FG output of reel motor was not zero in a specific time.	• Cut tape • Faulty circuit in reel FG system
	30....	**Failure in communication with reel microcomputer** • The system microcomputer was unable to communicate with the reel microcomputer; the protective action was executed.[*2]	The system microcomputer failed to make a correct communication with the reel microcomputer continuously by specific times.[*3]	• Failure in 4 MHz clock of reel microcomputer • Fault in enable device decode circuit of serial interface • Fault in reel microcomputer

*2; If tape is cut, the protective action may fail to be executed and the reel motor may continue to rotate.
In this case, the power of VTR should be turned off to stop the motor to rotate.

*3; After this error is displayed, if the communication failure is avoided, the error display will be released without turning off the power.

*4; For the system microcomputer (serial number 10001—10310, 20001—20151) up to version 2.2, it should be noted that the sub error code 05 associated with Err-20 is displayed as 06.
For the system microcomputer version 2.25 and after, the sub error code 06 is displayed.

*5; For the system microcomputer (serial number 10001—10310, 20001—20151) up to version 2.2, it should be noted that Err-23 is displayed as Err-20. In this case, the sub error code is not allowed to be displayed.
For the system microcomputer version 2.25 and after, Err-23 is displayed.

Error code	Sub error code	Contents	Error detecting method	Possible failure
Err-22	00....	There was a failure in communication with the option (SVBK-100/110/120); the protective action was executed.	The system microcomputer failed to make a correct communication with the microcomputer on the option side continuously by specific times.(*3)	• Break or poor connection of harness • Failure in clock of microcomputer on option side • Fault in enable device decode circuit of serial interface • Fault in microcomputer on option side
	01—05	(Reserved code)		
Err-23 (*5)	Unable to display	There was a failure in communication from KY-219 board to SS-49 board; the protective action was executed.	The system microcomputer judged that the data sent from KY board microcomputer is faulty, and then the KY board microcomputer receives that information from the system microcomputer.	• Break or poor connection of harness(*8) • Fault in microcomputer of KY board
Err-30	00	Failure in the tension regulator LED was detected; the protective action was executed.	The voltage of the tension regulator LED failure detection input to the reel microcomputer was set at High level (logic level) continuously for a specific time.	• Fault in tension regulator LED • Break or poor connection of harness • Fault in detection circuit • Fault in reel microcomputer
Err-31	00	Failure in the tape top/end LED was detected; the protective action was executed.	The voltage of the tape top/end LED failure detection input to the reel microcomputer was set at High level (logic level) continuously for a specific time.	• Fault in tape top/end LED • Break or poor connection of harness • Fault in detection circuit • Fault in LED ON/OFF circuit • Fault in reel microcomputer
Err-32	00	LED failure in the cam mode sensor was detected; the protective action was executed.(*6)	The voltage of the cam mode LED failure detection input to the system microcomputer was set at High level (logic level) continuously for a specific time.	• Fault in cam mode sensor LED • Break or poor connection of harness • Fault in detection circuit • Fault in system microcomputer
Err-90	Unable to display	There was a failure in communication from SS-49 board to KY-219 board; the error was displayed.(*3, *7)	The KY board microcomputer judged the data sent from system microcomputer as faulty, and then that was continued for a specific time.	• Break or poor connection of harness(*9) • System microcomputer 8 MHz clock failure • Faulty enable device decode circuit of serial interface • Faulty system microcomputer

*3; After this error is displayed, if the communication failure is avoided, the error display will be released without turning off the power.

*5; For the system microcomputer (serial number 10001—10310, 20001—20151) up to version 2.2, it should be noted that Err-23 is displayed as Err-20.
In this case, the sub error code is not allowed to be displayed.

*6; When power is turned on with cassette inserted, if Err-32 is displayed, Err-20 (sub error code 03) will be displayed in a while.

*7; If a failure is present in the system microcomputer, the protective action might not be executed.
In this case, turn off the power of VTR to stop the operation.

*8; Break of the harness connected to pin 6 of CN151 is the most probable fault.

*9; Even when the LED display on the front panel is faulty, if control of cassette and tape run is permitted by button operation or with the remote control, break of the harness connected to pin 5 of CN151 is the most probable fault.

SECTION 3
PERIODIC CHECK AND MAINTENANCE

It is recommended that you carry out the following periodic checks and maintenance in order to obtain good performance and ensure a long life for the unit and tape. Use the hoursmeter value displayed on the front panel as a guide for determining the check timing.

3-1. MAINTENANCE AFTER REPAIRS

Carry out the following maintenance after repair without regard to the operating hours of the unit.

(1) Cleaning Rotary Upper Drum
Press a cleaning cloth moistened with cleaning fluid lightly against Rotary Upper Drum and turn the Rotary Upper Drum slowly counterclockwise by means of a hand.

Note : Never turn the Drum by means of the unit is switched. Never turn it clockwise by means of a hand. If cleaning head chip, never move the cleaning cloth in vertical direction. You damage the head chip.

(2) Cleaning the tape run system (See drawing as shown below.)
Clean the tape run system (guides TG-1 to TG-9, RVS guide, F•R guide, capstan shaft, pinch roller, audio head, and FE head) with a cleaning piece moistened with cleaning fluid.

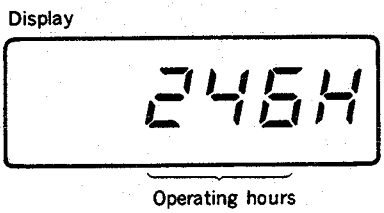
(3) Cleaning the drive system
Clean the surface of the reel table with a cleaning piece moistened with cleaning fluid.

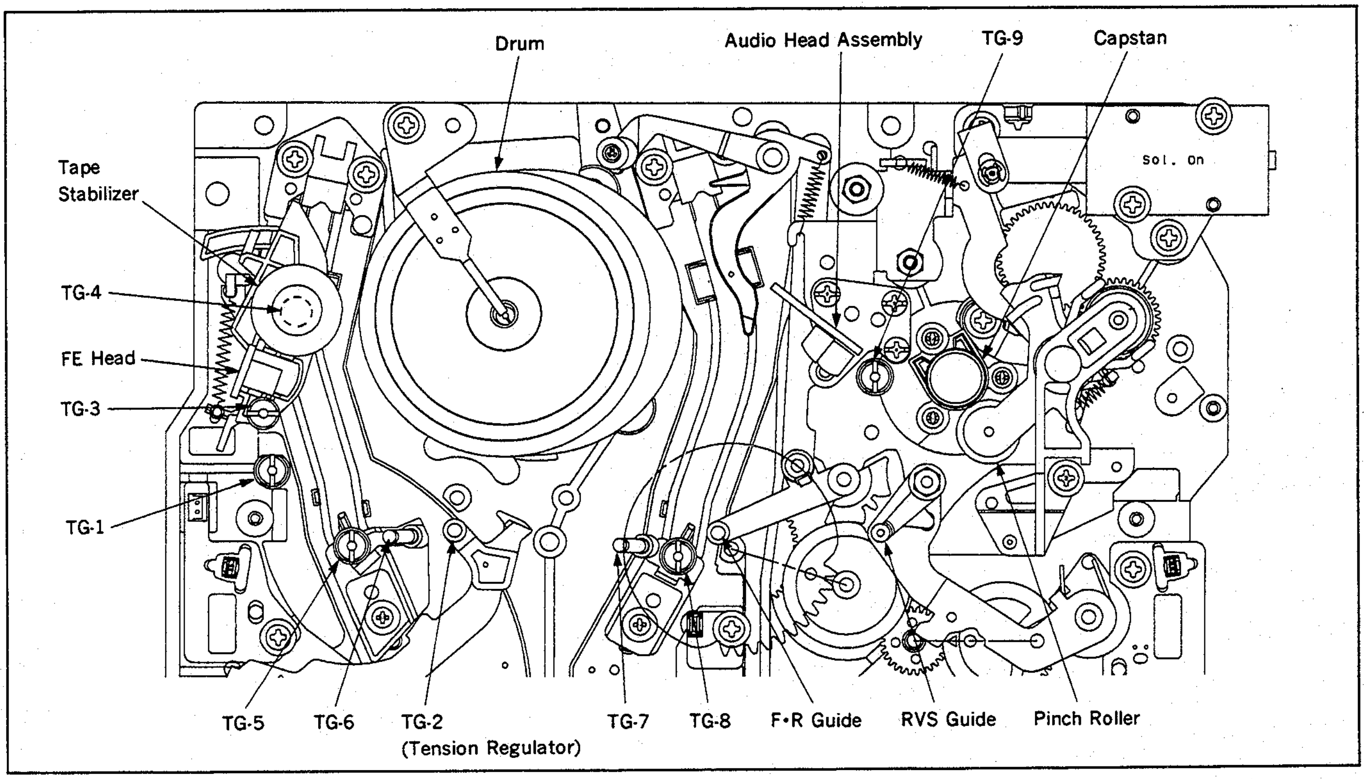
3-2. HOURS METER

The front panel display of this VTR can display the accumulated operating hours of the video heads.

● Procedure of displaying hoursmeter

1) Set the CTL/MENU switch of front panel to CTL.
2) Set the PROGRAM switch of front panel to B⟲A.
3) Keep the RESET button of front panel depressed for ammount 2 seconds.


Display
246H
Operating hours


Drum
Audio Head Assembly
TG-9
Capstan
Tape Stabilizer
TG-4
FE Head
TG-3
TG-1
Sol. On
TG-5
TG-6
TG-2 (Tension Regulator)
TG-7
TG-8
F•R Guide
RVS Guide
Pinch Roller

3-3. PERIODIC CHECK

Carry out periodic checks and maintenance according to operating hours of the unit.

○ : Cleaning ◆ : Replacement ◇ : Checking □ : Greasing

Item			Hours of use (H) : Hour of Drum Rotation										Reference Section
	Part Name	Part No.	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Tape Run System	Tape Run surface	—	○	○	○	○	○	○	○	○	○	○	—
	(Note 1) Pinch Roller Block Ass'y	A-6750-279-C	○	○	○	◆/□	○	○	○	◆/□	○	○	4-12
	Audio Head Ass'y	A-6736-092-A	○	○	○	○	○	○	○	◆	○	○	4-10
	Guide Roller Ass'y	X-3165-337-1								◆			4-25,4-27
	Shaft Ground Ass'y	X-3165-584-1								◆			4-4
	FE Head	1-543-695-11	○	○	○	○	○	○	○	◆	○	○	4-8
	Capstan Motor (SCV-0401A)	8-835-480-02	○	○	○	○	○	○	○	◆	○	○	4-30
	Upper Drum Ass'y (DZR-40-R)	8-848-571-02	○	◆	○	◆	○	◆	○		○	◆	4-4
	Drum Ass'y (DZH-40A-R)	8-848-570-12	○	○	○	○	○	○	○	◆	○	○	4-5
Drive System	Brake Arm (S) Ass'y	X-3165-330-3								◆			4-18
	Brake Arm (T) Ass'y	X-3165-331-2								◆			4-18
	Reel Table Ass'y	X-3165-345-1				○				○			4-17
	LDB Arm Ass'y	X-3166-511-1								◆			4-32
	Cleaning Roller Ass'y	X-3743-515-4				◆				◆			4-3
	Reel Moter (SRV-0201A)	8-835-432-01								◆			4-19
	(Note 1) Loading Gear (Right) Ass'y	A-6750-281-A				□				□			4-22
	(Note 1) Worm Gear (Cam Motor Ass'y)	3-733-395-01				□				□			3-5
	(Note 1) Worm Gear (Cassette Compartment)	3-736-100-01				□				□			3-5
	(Note 1) Shuttle Slide Surface	—				□				□			3-5
Check Performance	Abnormal-noise	—	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	—
	S side Tape Tension Measurement	—		◇		◇		◇		◇		◇	5-2,6-2
	Reel Table torque Measurement	—				◇				◇			5-1

Note 1 : Grease the VTR according to sub-section 3-5.

Note 2 : The period shown in the table is not a guarantee value. The parts replacement period differs depending on the environment in which the VTR is used, so take the operating environment into consideration when drawing up a maintenance and check plan.

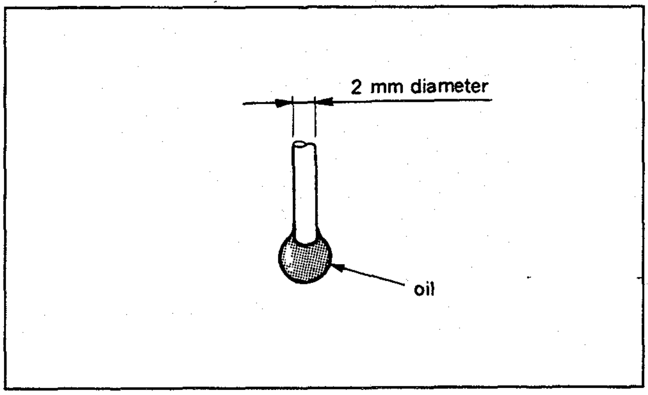
Note 3 : Be sure to clean the tape run surface after repairing it.

3-4. OILING

Oiling is described in 「SECTION 4. REPLACEMENT OF MAJOR PARTS」 for the applicable parts.

(1) Sony oil

- Be sure to use Sony oil. (If another brand of oil is used, the viscosity will be different, leading to trouble.)
  Sony oil : Sony part No. 7-661-018-18
- Be sure that the Sony oil used to lubricate the bearings is free of dirt and other foreign matter. (If the oil contains dirt, the bearings are liable to seize and also wear will be accelerated.)
- One drop of oil means a drop on the end of a rod of 2 mm diameter (see figure).



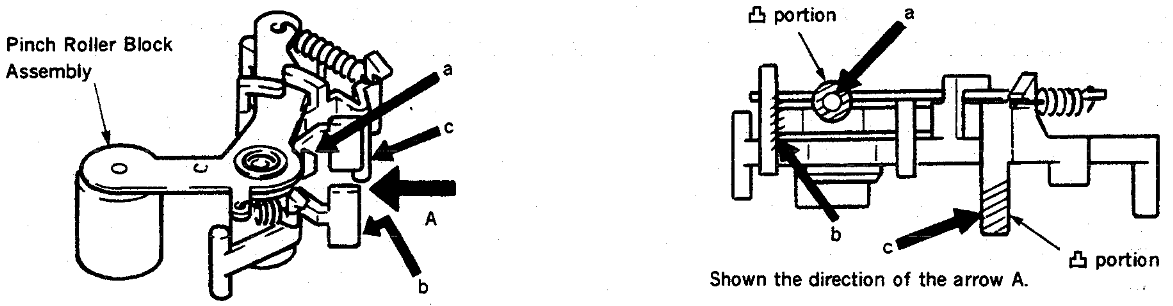
3-5. GREASING

(1) Periodically grease the following parts.
- The face that slides against the cam of the pinch roller block ass'y (Fig. 1)
- The face that slides against the loading gear (right) ass'y (Fig. 2)
- The face that slides against the shuttle (left)/(right) ass'y (Fig. 3)
- Cam motor ass'y worm gear (Fig. 4)
- Cassette compartment worm gear (Fig. 5)

(2) Greasing
- Be sure to use the specified grease.

MOLYKOTE grease EM-30LG (Color : green) :
Sony part No. J-6090-014-A
or
MOLYKOTE grease EM-30L (Color : Colorless) :
DOW CORNING Corp.

Apply a small quantity of grease to the areas marked in the figure (shaded areas and other areas indicated by the arrows).


Pinch Roller Block Assembly
a
c
A
b
凸 portion
a
b
c
凸 portion

Shown the direction of the arrow A.

Fig. 1

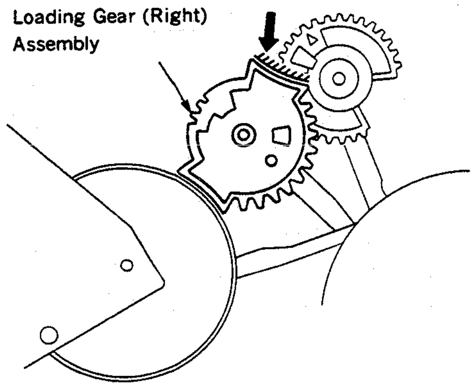

Loading Gear (Right) Assembly

Fig. 2

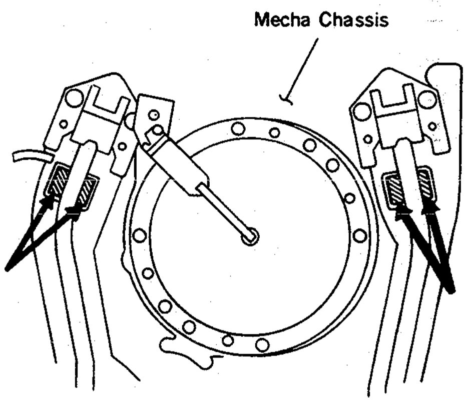

Mecha Chassis

Fig. 3

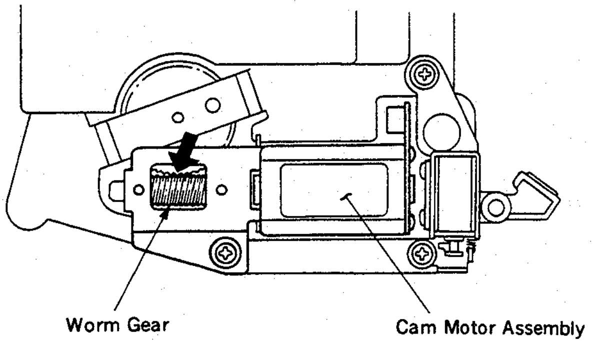

Worm Gear
Cam Motor Assembly

Fig. 4

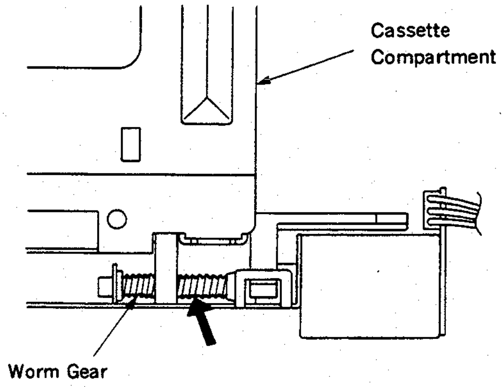

Cassette Compartment
Worm Gear

Fig. 5

SECTION 4
REPLACEMENT OF MAJOR PARTS

- Refer to Section 2 for details of removing the externals and the printed circuit boards.
- Re-install the various parts in the opposite sequence to removal, while referring to "Precautions for Installation".

4-1. PREPARATIONS FOR REPLACING PARTS

- Do not load or thread a cassette when the VTR is inverted.

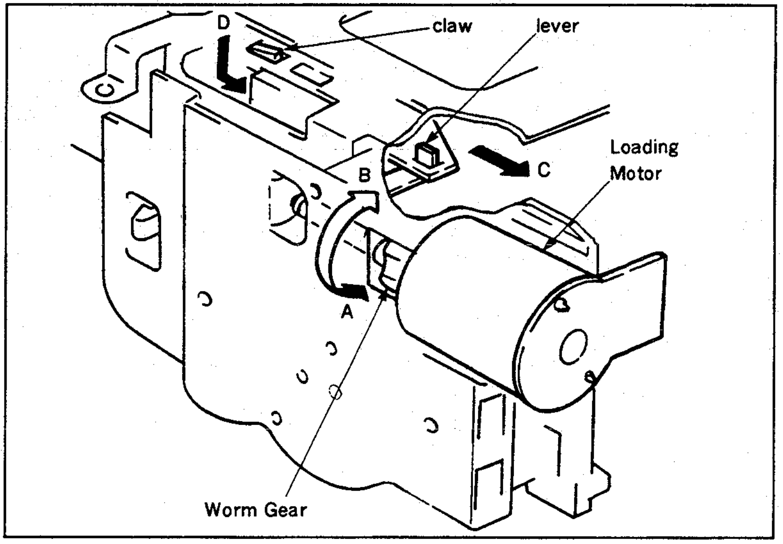
4-1-1. Method of Loading and Unloading the Cassette Compartment when the Power is OFF

[Loading]

- Push the lever in the direction of arrow C and release the claw (direction of arrow D), then rotate the worm gear in the direction of arrow B with the fingers until loading is completed.
  (When a cassette tape is loaded in the cassette compartment, the claw will automatically release.)

[Unloading]

- Rotate the worm gear in the direction of arrow A with the fingers until unloading is completed.


D
claw
lever
B
C
Loading Motor
A
Worm Gear

4-1-2. Method of Threading and Unthreading when the Power is OFF

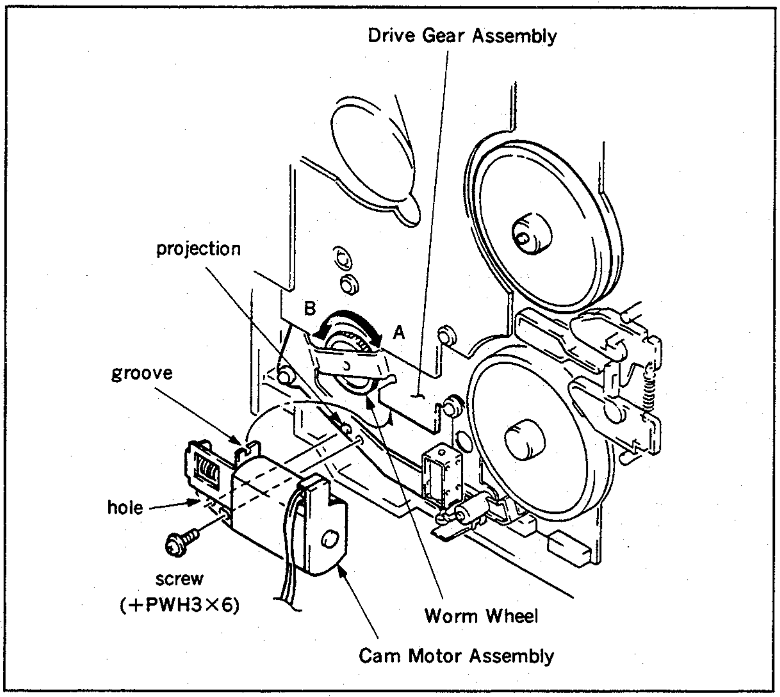
(1) Remove the screws, then remove the cam motor ass'y from the drive gear ass'y.

[Threading]

- Rotate the worm wheel with the fingers in the direction of arrow A until threading is completed.

[Unthreading]

- Rotate the worm wheel with the fingers in the direction of arrow B until unthreading is completed.


Drive Gear Assembly
projection
B
A
groove
hole
screw
(+PWH3×6)
Worm Wheel
Cam Motor Assembly

4-1-3. Method of Operating the VTR without a Cassette Compartment or Cassette Tape

(1) Remove the cassette compartment according to sub-section 2-6.
(2) Turn ON No. 8 switch of DIP switch S101/SS board (H-9/J-9). (This is to neutralize the tape top/end sensor function) (Fig. 1)
(3) Push down the CASSETTE DOWN switch with tape, etc. (Fig. 2)
(4) Turn the POWER switch ON.

In this condition, the VTR can be also operated from the remote controller (SVRM-100, RM-V200, RM-V100, etc.)

Note: Be sure to turn OFF No. 8 switch of DIP switch S101 after completion of operation.

[Operating the VTR with the cassette compartment removed and a cassette tape loaded]

- Be sure to turn OFF No. 8 switch of DIP switch S101.
  (If the DIP switch is turned ON, the tape will not stop at the tape top/end, resulting in possible damage to the head tip and deformation of the tape guide.)

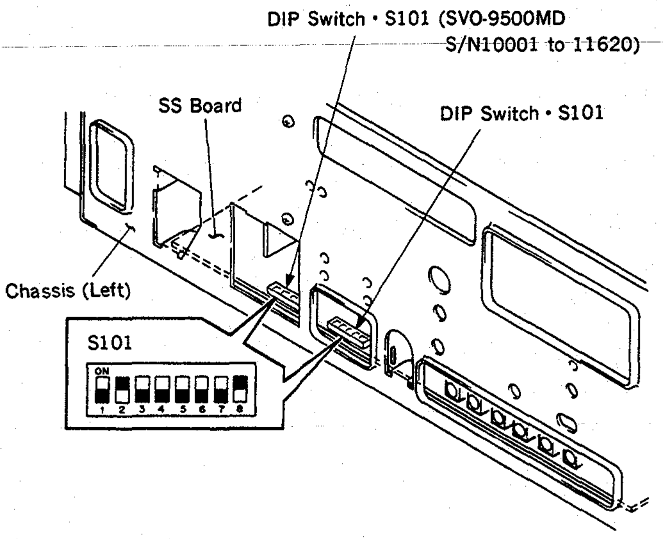

DIP Switch • S101 (SVO-9500MD
S/N10001 to 11620)
SS Board
DIP Switch • S101
Chassis (Left)
S101
ON
1 2 3 4 5 6 7 8

Fig. 1

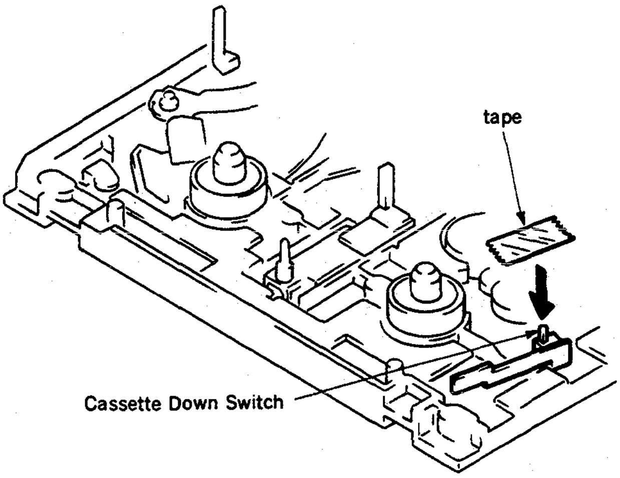

tape
Cassette Down Switch

Fig. 2

4-1-4. How to get the best Engaging Phase of Gears when Replacing.

A hole and/or a mark is added on each gear in this mechanism deck so that the engaging phases of the gears are easy to get when assembling. When replacing gear, install it as shown below, also refer the figures 1 and 2. (The replacement should be performed on the unthreading-end state.)

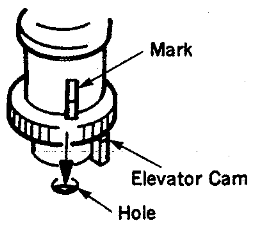
①	 Mark Elevator Cam Hole Match the mark of the elevator cam and the hole of the chassis. (Refer to sub-section 4-13)
②	Match the holes of the pressure cam gear and the chassis. (Refer to sub-section 4-13)
③	Match the holes of RVS cam gear and the chassis. (Refer to sub-section 4-14)
④	Match the holes of FR drive gear and the mode gear (2). (Refer to sub-section 4-16)

Figure of mechanism : Unthreading-end state (Cassette compartment is omitted from the figure)

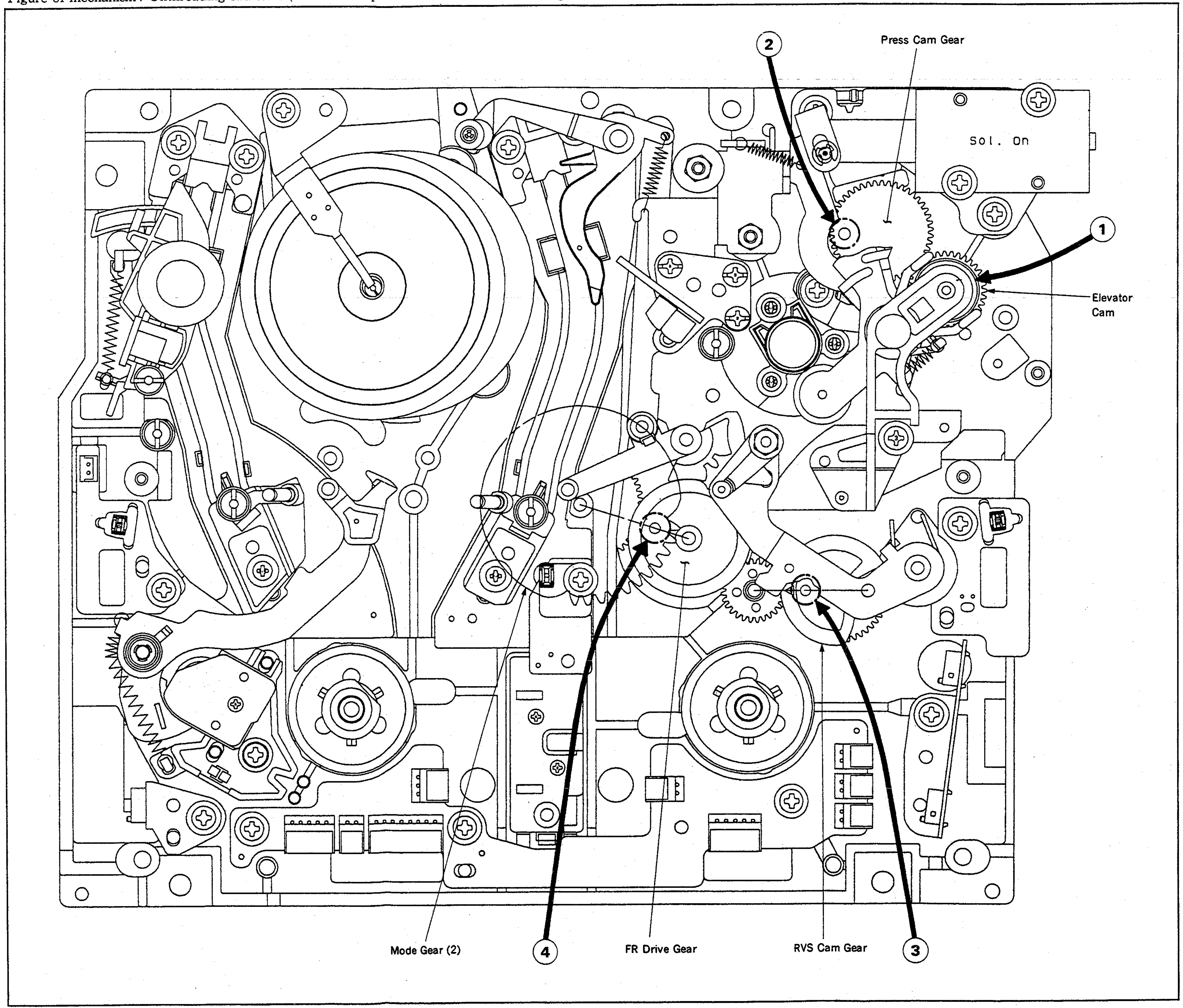

2
Press Cam Gear
Sol. On
1
Elevator Cam
Mode Gear (2)
4
FR Drive Gear
RVS Cam Gear
3

Fig. 1 Top View

Figure of mechanism : Unthreading-end state

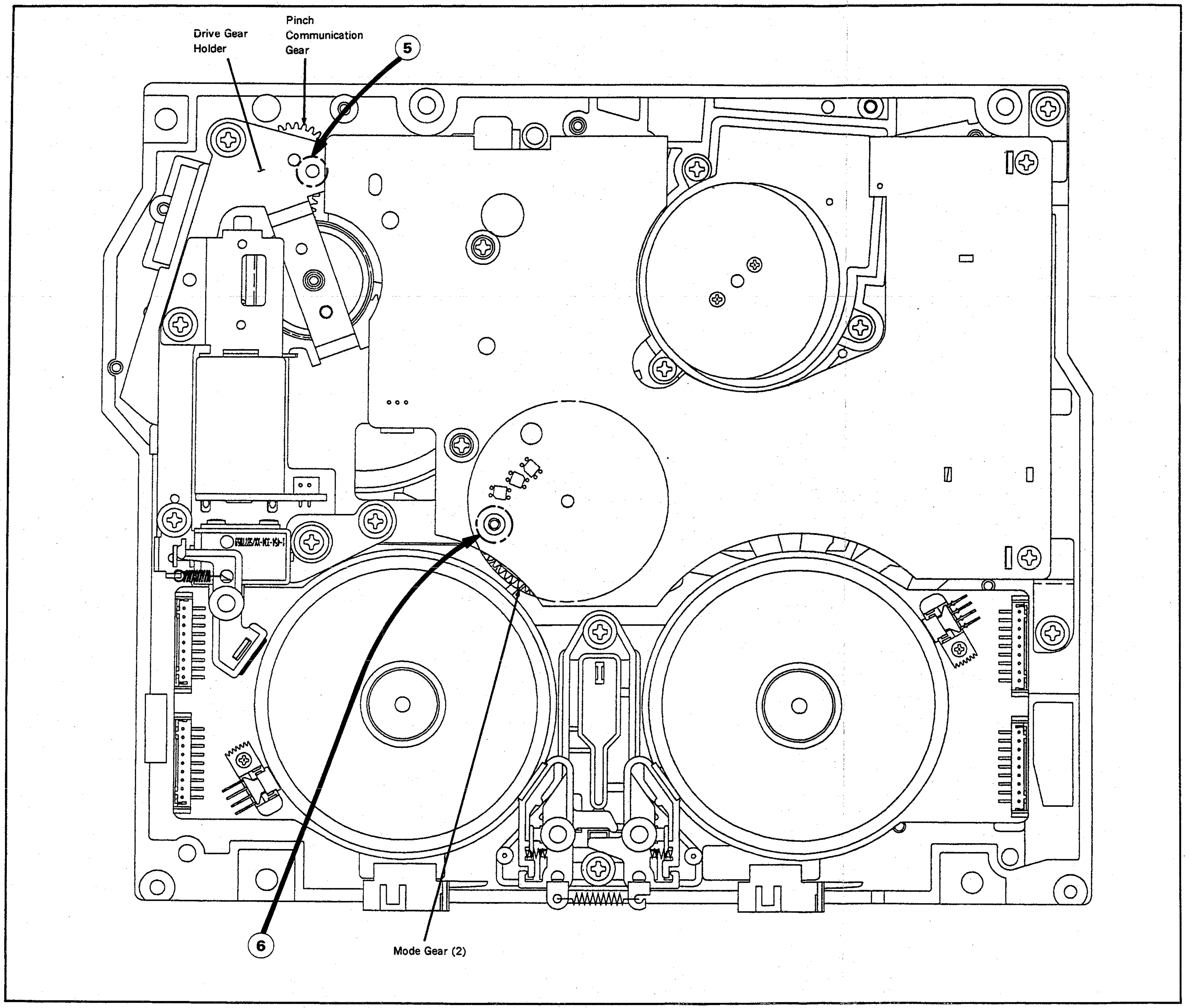

Drive Gear Holder
Pinch Communication Gear
5
6
Mode Gear (2)

Fig. 2 Bottom View

⑤	Match the holes of the pinch communication gear and the drive gear holder. (Refer to sub-section 4-20)
⑥	Match the holes of the mode gear (2) and the drive gear holder. (Refer to sub-section 4-20)

4-2. CASSETTE COMPARTMENT (FL ASS'Y) REPLACEMENT

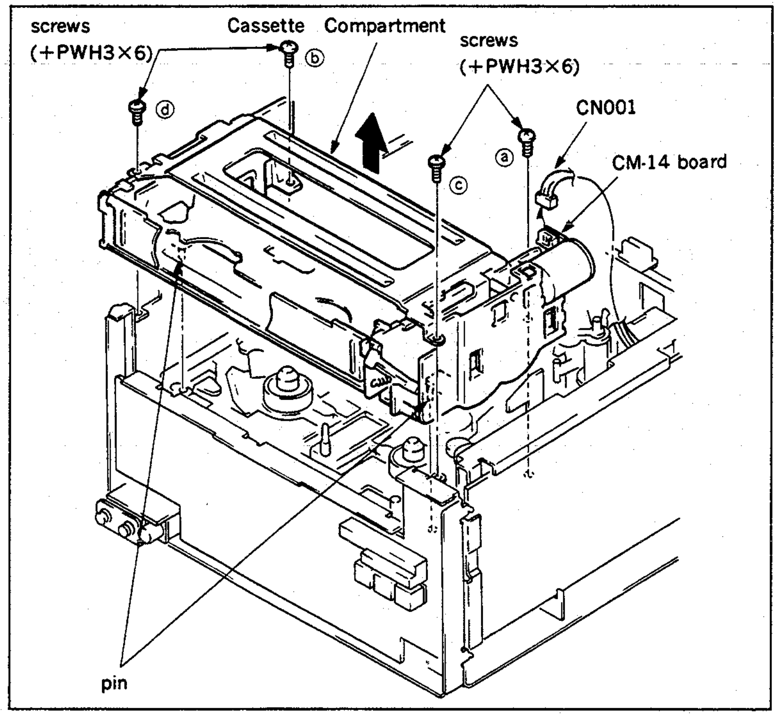
(1) Disconnect connector CN001 from the CM-14 board.

(2) Remove four screws, and remove the cassette compartment (FL ass'y) in the direction of the arrow.

Precautions for installation

①Align two pins of the cassette compartment with the holes in the base plate.

②Tighten the screws in the sequence ⓐ to ⓓ.


screws
(+PWH3×6)
Cassette Compartment
ⓑ
screws
(+PWH3×6)
ⓓ
CN001
ⓐ
ⓒ
CM-14 board
pin

4-2-1. Prevention Lever Replacement

(1) Remove the spring.

(2) Remove the claw, and move the prevention lever in the direction of arrow A.

(3) Remove the prevention lever in the direction of arrow B.

Precautions for installation

①The shaft of the prevention lever must enter the groove in the drive arm (left). (Fig. 2)

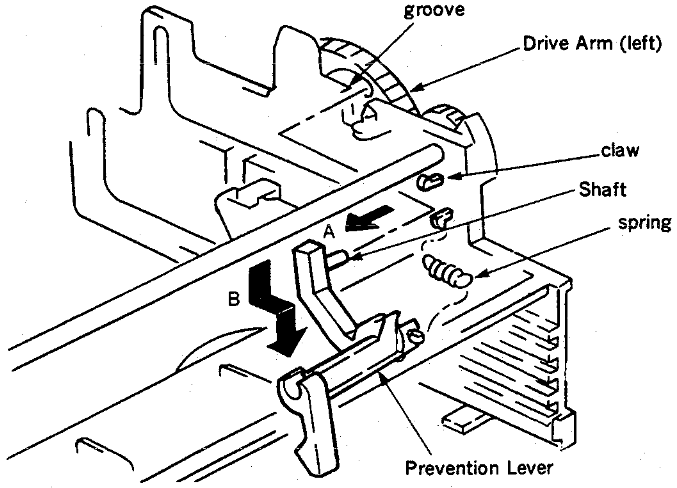

groove
Drive Arm (left)
claw
Shaft
spring
A
B
Prevention Lever

Fig. 1

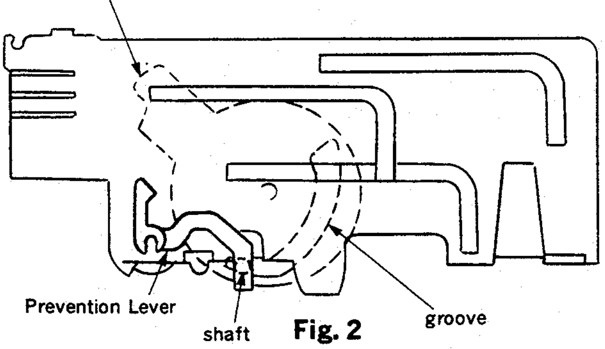

Drive Arm (left)
Prevention Lever
shaft
groove

Fig. 2

4-2-2. Loading Motor, Worm Gear (FL), Worm Wheel (FL) and Worm Retainer Replacement

(1) Remove four claws, then remove the gear cover ass'y. (Fig. 1)

(2) Remove the stop washer 3, then pull out the worm wheel (FL). (Fig. 2)

(3) Remove two screws, then remove the loading motor. (Fig. 2)

(4) Remove the worm gear (FL) and the worm retainer. (Fig. 2)

Precautions for installation

①To install the gear cover ass'y, obtain a shaft of 2 mm diameter and length of at least 30 mm. Pass the shaft through the holes in the gear cover ass'y, worm wheel (FL), drive arm (right) ass'y and right side plate, and engage the gear cover ass'y with the claw. (Fig. 3)

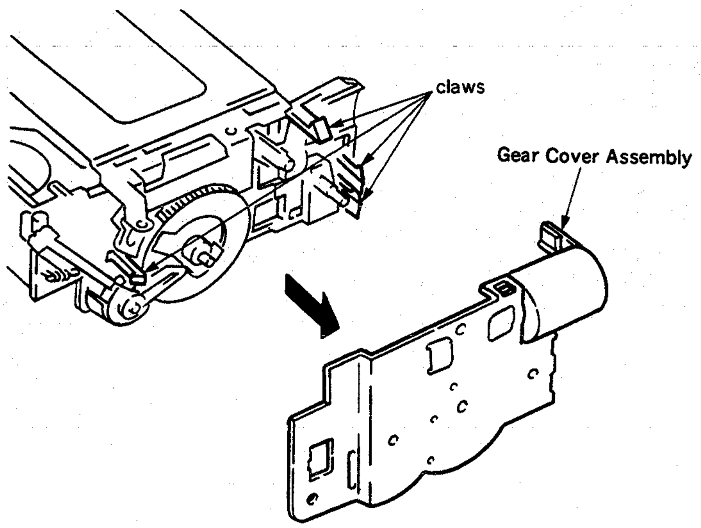

claws
Gear Cover Assembly

Fig. 1

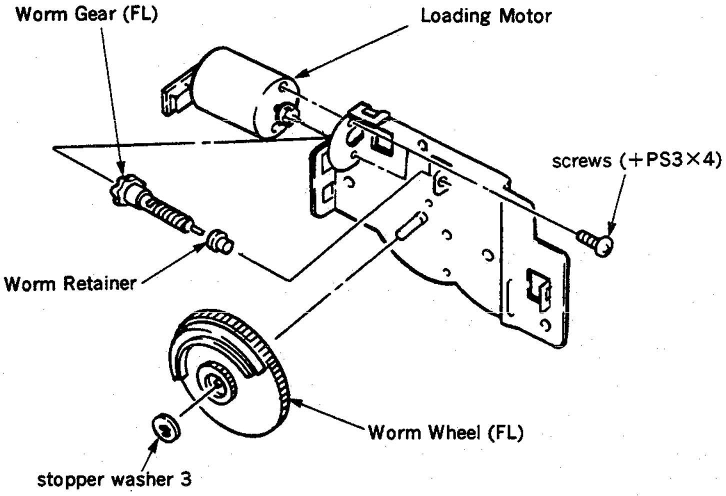

Worm Gear (FL)
Loading Motor
screws (+PS3×4)
Worm Retainer
Worm Wheel (FL)
stopper washer 3

Fig. 2

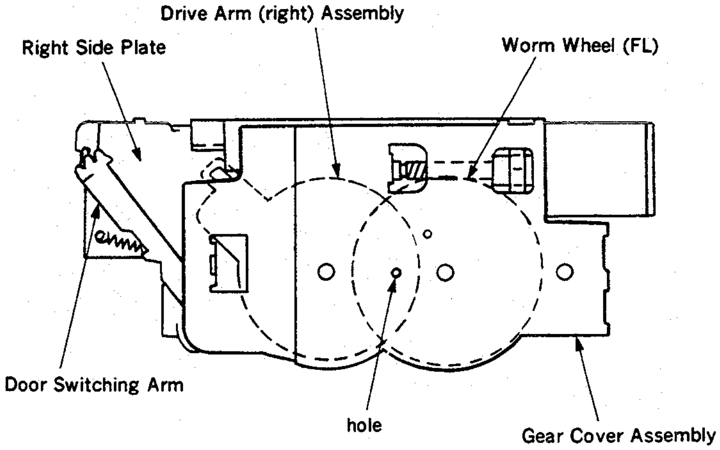
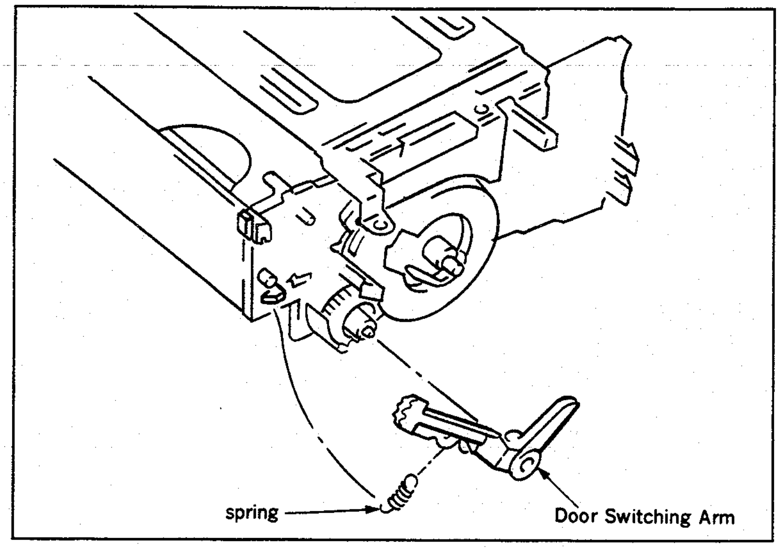

Drive Arm (right) Assembly
Right Side Plate
Worm Wheel (FL)
Door Switching Arm
hole
Gear Cover Assembly

Fig. 3

4-2-3. Door Switching Arm Replacement

(1) Remove the spring.
(2) Pull out the door switching arm.


spring
Door Switching Arm

4-3. BC ROLLER ASS'Y REPLACEMENT

(1) Remove the spring from the notch in the ACE head base.
(2) Remove the stop washer (4 mm dia.), then remove the BC roller ass'y. (Fig. 1)

Precautions for installation

①Ensure that the opening of the hook is uppermost. (Fig. 2)
②Take care not to scratch the drum.
③Install the BC roller ass'y in such a way that the extremity enters the part of the shuttle holder indicated by the arrow in Fig. 2.

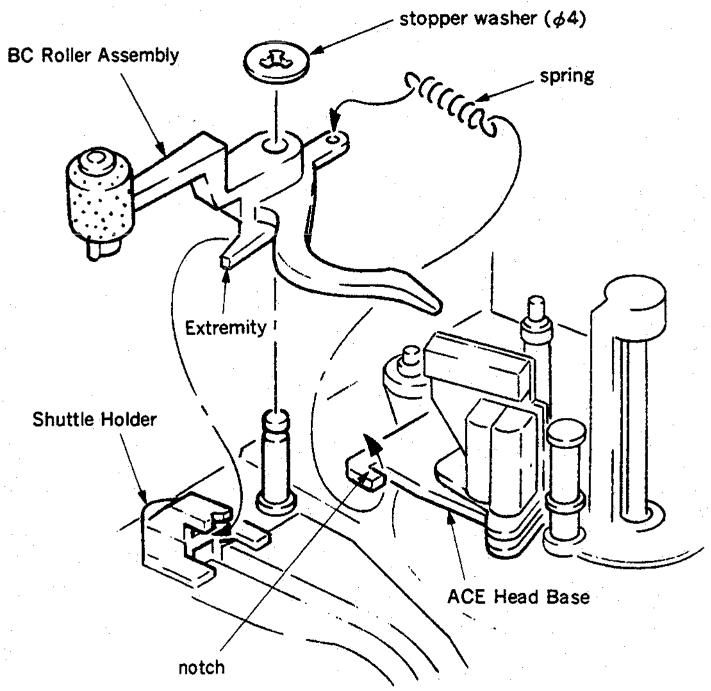

stopper washer (ϕ4)
BC Roller Assembly
spring
Extremity
Shuttle Holder
ACE Head Base
notch

Fig. 1

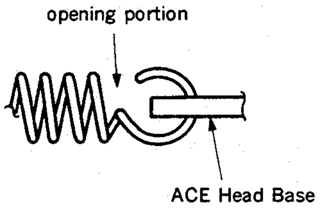

opening portion
ACE Head Base

Fig. 2

4-4. UPPER DRUM ASS'Y REPLACEMENT

Tools:

Alignment tape (KRV-51HN or KRV-45HNS)
Alignment tape (KRV-5821NSA)
Alignment tape (JVC-MH-1)
X value adjustment tool (J-6380-710-A)
RP extension tool (J-6381-370-A)
Box screwdriver (width 5.5 mm)
Guide adjustment screwdriver (J-6082-044-A or J-6080-811-A)
Oscilloscope
Connecting cable (See sub-section 6-9.)
S-VHS cassette tape (T-160 and T-120)

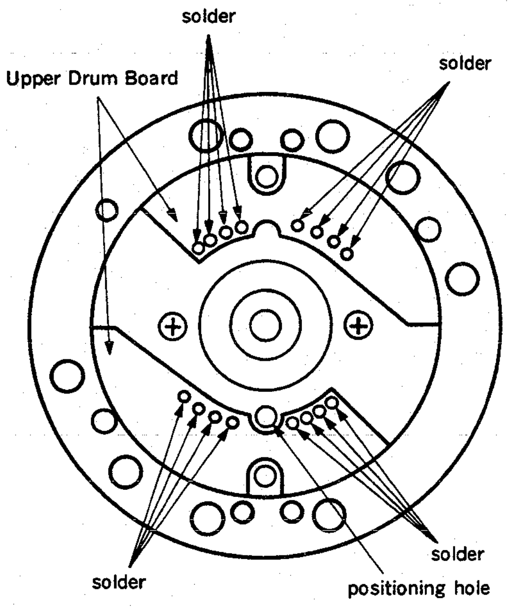
(1) Remove the screw, then remove the shaft ground ass'y. (Fig. 2)
(2) Unsolder sixteen points on the upper drum board shown in Fig. 1.
(3) Remove two screws, then remove the upper drum ass'y. (Fig. 2)

Precautions for installation

①Do not touch the head tip and the contact of the shaft ground ass'y with the fingers or a tool.
②Clean the surface of the drum shaft that touches the contact of the shaft ground ass'y, using cleaning fluid.
③Install the contact of the shaft ground ass'y at roughly the center of the drum shaft.
④Align the locating hole of the upper drum ass'y with this of the lower drum ass'y, then install the upper drum ass'y.
⑤The tightening torque for installing the upper drum ass'y must be 590×10^{-3} N·m (6 kg·cm).

[**Adjustment after replacing the upper drum ass'y**]

- See next page.


solder
Upper Drum Board
solder
solder
solder
positioning hole

Upper Drum Assembly (Top View)

Fig. 1

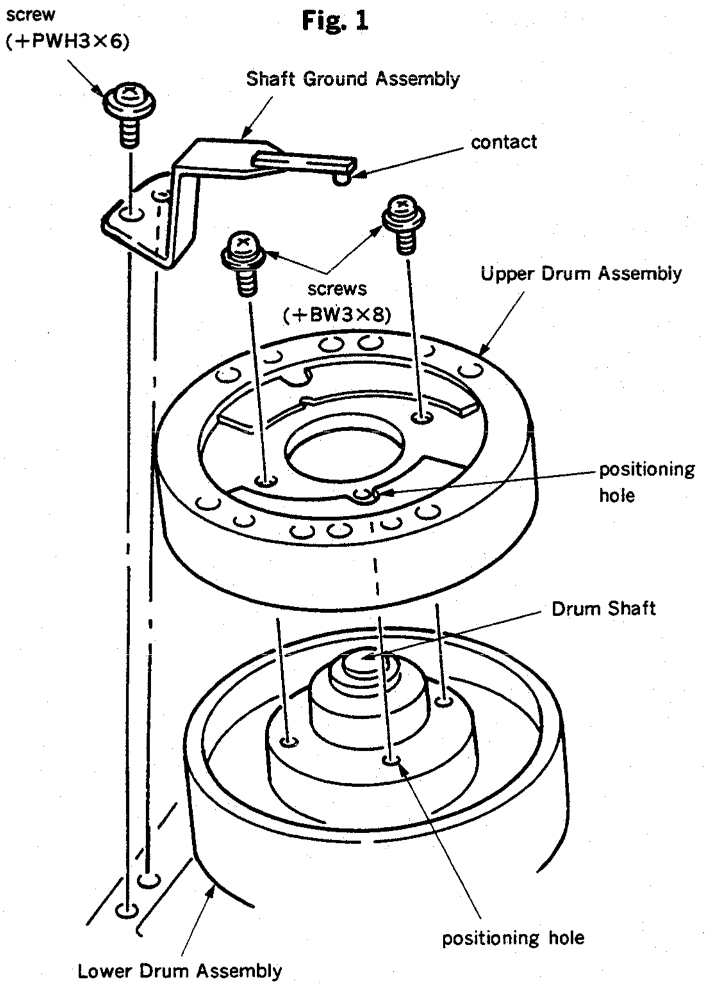
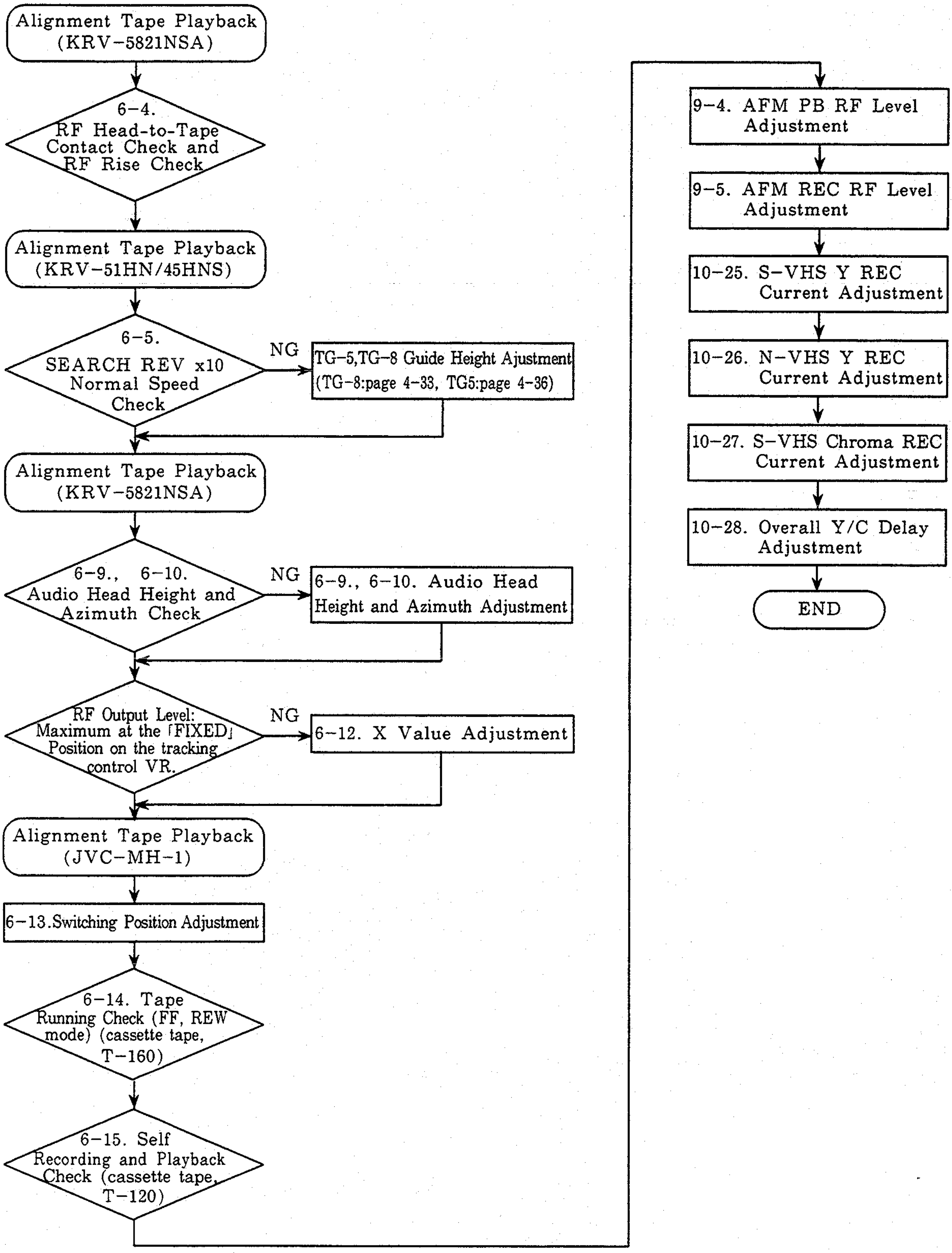

screw
(+PWH3×6)
Shaft Ground Assembly
contact
screws
(+BW3×8)
Upper Drum Assembly
positioning hole
Drum Shaft
positioning hole
Lower Drum Assembly

Fig. 2

[**Adjustment after replacing the upper drum ass'y**]

- Refer to Section 6, perform the Tape Run Alignment.
- Then perform the Audio (Section 9) and the Video (Section 10) system alignments as follows.


Alignment Tape Playback (KRV-5821NSA)
6-4. RF Head-to-Tape Contact Check and RF Rise Check
Alignment Tape Playback (KRV-51HN/45HNS)
6-5. SEARCH REV x10 Normal Speed Check
NG
TG-5,TG-8 Guide Height Ajustment (TG-8:page 4-33, TG5:page 4-36)
Alignment Tape Playback (KRV-5821NSA)
6-9., 6-10. Audio Head Height and Azimuth Check
NG
6-9., 6-10. Audio Head Height and Azimuth Adjustment
RF Output Level: Maximum at the 「FIXED」 Position on the tracking control VR.
NG
6-12. X Value Adjustment
Alignment Tape Playback (JVC-MH-1)
6-13.Switching Position Adjustment
6-14. Tape Running Check (FF, REW mode) (cassette tape, T-160)
6-15. Self Recording and Playback Check (cassette tape, T-120)
9-4. AFM PB RF Level Adjustment
9-5. AFM REC RF Level Adjustment
10-25. S-VHS Y REC Current Adjustment
10-26. N-VHS Y REC Current Adjustment
10-27. S-VHS Chroma REC Current Adjustment
10-28. Overall Y/C Delay Adjustment
END

4-5. DRUM ASS'Y REPLACEMENT

Tools :
Alignment tape (KRV-51HN or KRV-45HNS)
Alignment tape (KRV-5821NSA)
Alignment tape (JVC-MH-1)
X value adjustment tool (J-6380-710-A)
RP extension tool (J-6381-370-A)
Box screwdriver (width 5.5 mm)
Guide adjustment screwdriver (J-6082-044-A or J-6080-811-A)
Oscilloscope
Connecting cable (See sub-section 6-9.)
S-VHS cassette tapes (T-160 and T-120)

(1) Remove the drum harness from the RP board. (Fig. 1)
(2) Remove the screw, then remove the shaft ground ass'y. (Fig. 2)
(3) Disconnect connector CN604 from the drum ass'y. (Fig. 2)
(4) Remove three screws, then remove the drum ass'y. (Fig. 2)

Precautions for installation

①Do not touch the head tip and the contact of the shaft ground ass'y with the fingers or a tool.
②Clean the following parts with cleaning fluid.
- The surface of the drum shaft that touches the ground contact of shaft ground assembly.
- The mounting faces of the drum ass'y and the chassis.
- The surface of the drum ass'y over which the tape travels

③Align the holes (two) in the drum ass'y with the pins (two) on the chassis, then install the drum ass'y.
④The tightening torque of the mounting screws of the drum ass'y must be 392×10^{-3} to 490×10^{-3} N·m (4 to 5 kg·cm).
⑤Connect the drum harness to CN801 of the RP board while being careful of the direction of the conductor side.

[Adjustment after Replacing the Drum Ass'y]
See sub-section 4-4. [Same as the method of performing adjustment after replacing the upper drum ass'y]

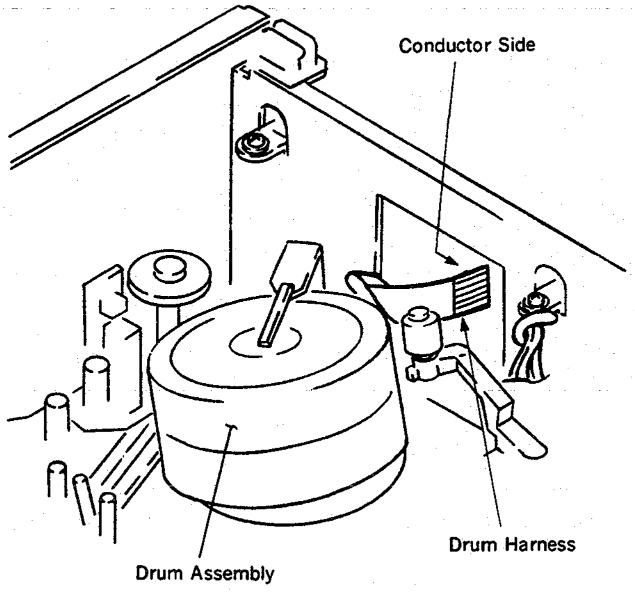


Fig. 1

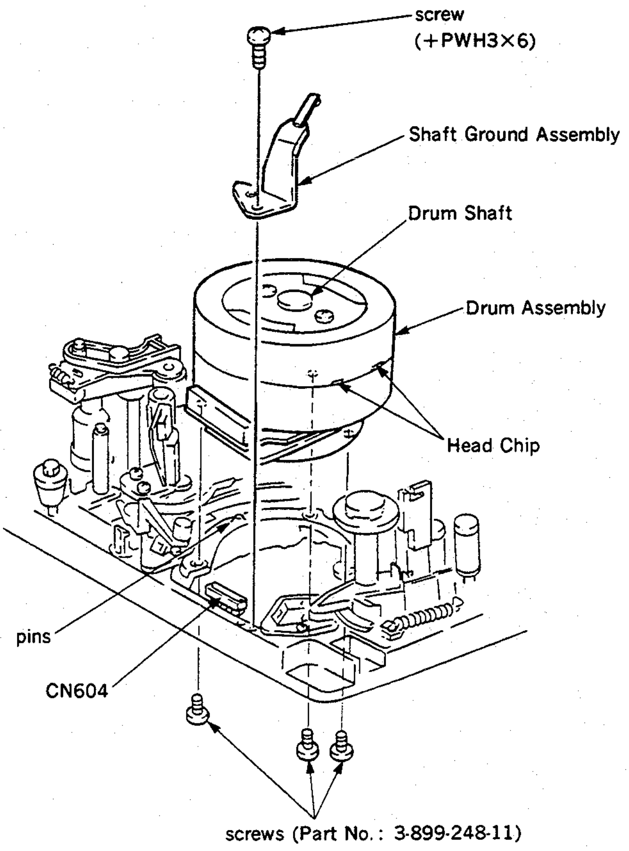


Fig. 2

4-6. TG-1 GUIDE REPLACEMENT

Tools :

Reference plate (J-6380-080-A)
Master block (J-6380-700-A)
Guide adjustment screwdriver (J-6082-044-A or J-6080-811-A)
Hex wrench screwdriver (width 0.89 mm)
Remote controller (SVRM-100, RM-V100, or RM-V200)

(1) Remove the cassette compartment according to sub-section 4-2.
(2) Loosen the set screw by inserting the hex wrench into the hole in the chassis (left). (Fig. 1)
(3) Rotate the TG-1 guide counterclockwise with the guide adjustment screwdriver, and remove it. (Fig. 1)

[Installation and height adjustment]

(1) Press the PLAY button on the remote controller for the threading completion mode. (See sub-section 4-1-3.)
(2) Clean the mounting face of the reference plate and the four mounting points on the chassis with cleaning fluid.
(3) Install the reference plate on the chassis. (Fig. 3) (If the reference plate moves about when the top of the plate is touched gently with the fingers at a point near where it is installed on the chassis, turn the adjustment screw until the plate no longer moves about.)
(4) Clean the top of the reference plate and the adjustment face of the master block with cleaning fluid.
(5) Set the master block with the stamped L1 face upward, then place it against the TG-1 guide from the direction shown in the drawing, and tighten the set screw until the lower flange is roughly the same height as the go-end of the master block. (Figs. 2 and 3)
(Set screw tightening torque: 78×10^{-3} to 98×10^{-3} N·m (0.8 to 1 kg·cm))
(6) Turn the flange of the guide with the guide adjustment screwdriver until the required specification is satisfied. (Fig. 3)
(7) Perform tape run alignment of section 6.

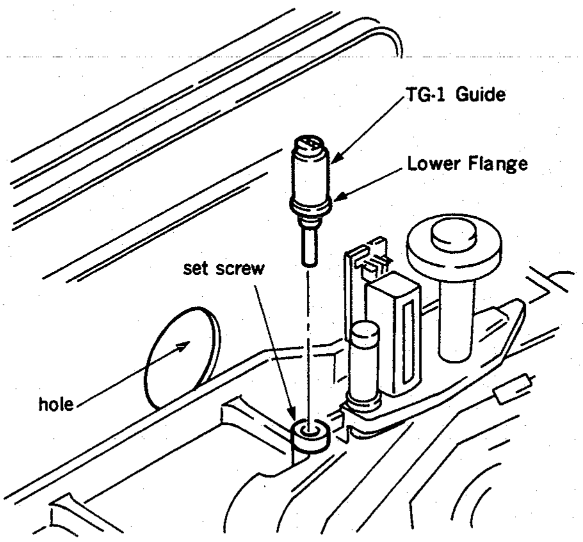

TG-1 Guide
Lower Flange
set screw
hole

Fig. 1

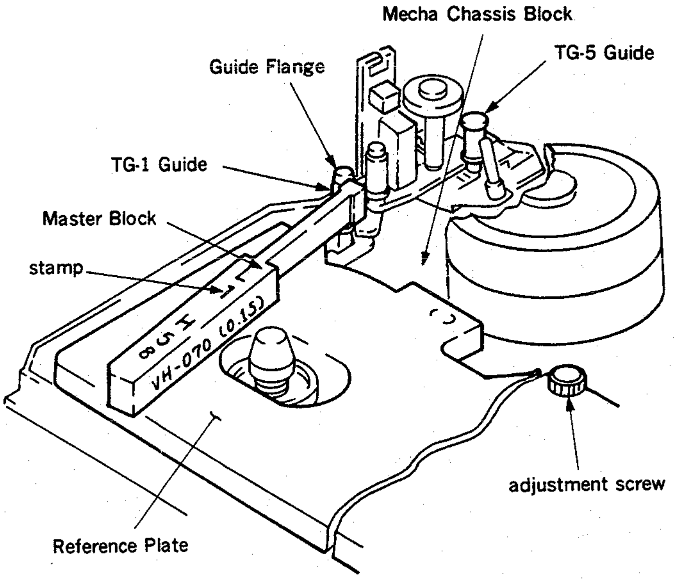

Mecha Chassis Block
Guide Flange
TG-5 Guide
TG-1 Guide
Master Block
stamp
VH-070 (0.15)
adjustment screw
Reference Plate

Fig. 2

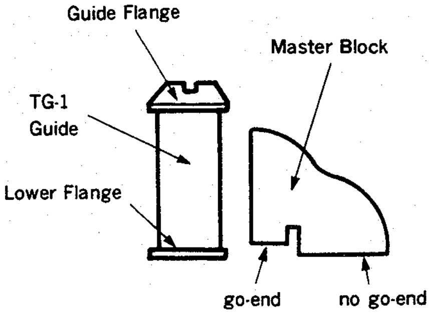

Guide Flange
Master Block
TG-1
Guide
Lower Flange
go-end
no go-end

Fig. 3

Spec. :
The height of the lower flange must pass at the go-end of the master block and stop at the no go-end.

4-7. TENSION REGULATOR ASS'Y (TG-2 GUIDE) AND STD ASS'Y REPLACEMENT

Tools:
Oscilloscope
Tentelometer (T2-H7-UMC)
Digital voltmeter
S-VHS cassette tape (T-120)
Sony oil (7-661-018-18)
Locking compound

(1) Remove the cassette compartment according to sub-section 4-2.
(2) Disconnect connector CN657Y from the HN board.
(3) Remove the spring from the STD ass'y.
(4) Remove the stop washer 2.3 and also the screw.
(5) Remove the tension regulator ass'y and STD ass'y together.
(Take care not to lose the poly-slider-washer.)

Precautions for installation

①Clean the shaft with cleaning fluid, and apply 1/2 a drop of Sony oil. (Fig. 1)

②Insert the slit arm of the tension regulator ass'y into the slit in the STD ass'y, then install the resulting ass'y on the shaft. (Fig. 1)

③Align the U groove and longitudinal hole of the STD ass'y with bosses **a** on the chassis (Fig. 1), then install the STD ass'y in such a way that the adjustment groove comes to a point mid-way between bosses **b**. (Fig. 2)

[**Adjustment after replacement**]

Mechanical adjustment of position of tension regulator ass'y

(1) Connect the oscilloscope as follows.
CH-1 (DC range): TP301/SS board (D-9)
(2) Turn ON No. 8 switch of DIP switch S101/SS board (H-9/J-9). (Fig. 3)
(3) Keep the cassette down switch pressed down with finger. (Fig. 3)
(4) Turn ON the POWER switch.
(5) Press the PLAY button of the unit for the threading completion mode (rotate the drum).
(6) Remove a finger from the cassette down switch.

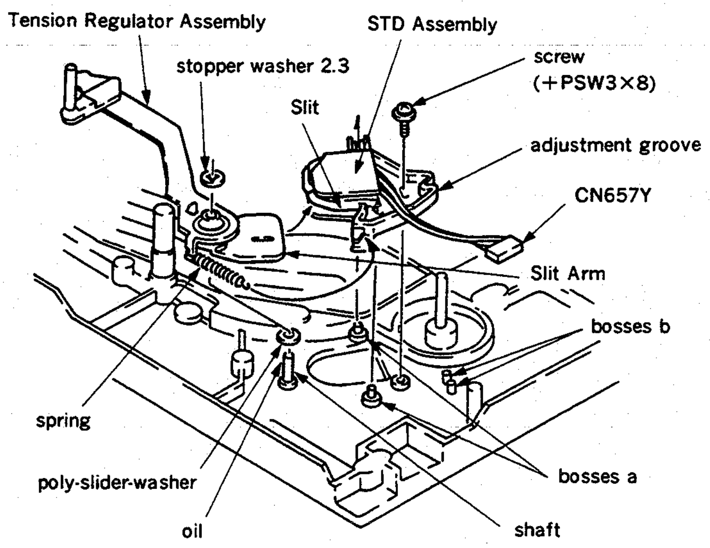

Tension Regulator Assembly
STD Assembly
stopper washer 2.3
screw
(+PSW3×8)
Slit
adjustment groove
CN657Y
Slit Arm
bosses b
spring
bosses a
poly-slider-washer
oil
shaft

Fig. 1

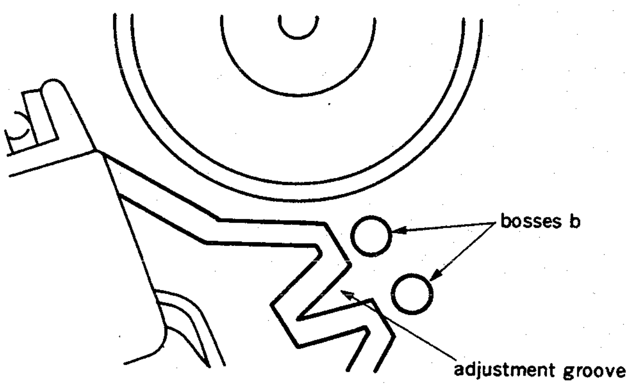

bosses b
adjustment groove

Fig. 2

a: SVO-9500MD S/N 20001 and higher and SVO-9500MD4
b: SVO-9500MD S/N 10001 to 11620

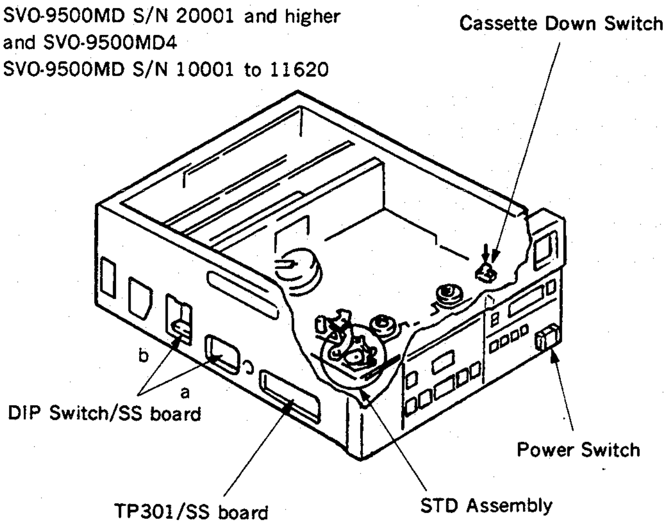

Cassette Down Switch
b
a
DIP Switch/SS board
Power Switch
TP301/SS board
STD Assembly

Fig. 3

(7) Loosen the screw of the STD ass'y by about 90°.

(8) Insert a screwdriver into the position shown in Fig. 4, then move the STD ass'y in the direction of arrows A and B, and set it to the position where the DC voltage of TP301 is minimum.

(9) Move the STD ass'y slightly in the direction of arrow C, and tighten the screw until the DC voltage of TP301 is within the specification range. (Fig. 4)

(10) Confirm that when the tension regulator ass'y is moved in the direction of the arrow D, the DC voltage of TP301 increases in direct proportion. (Fig. 5)

(11) Press the STOP button of the unit for the un-threading completion mode.

(12) Turn OFF No. 8 switch of the DIP switch.

(13) Smear the screw of the STD ass'y with locking compound. (Fig. 4)

Tape tension adjustment

(14) Perform tape tension adjustment according to sub-section 5-2.

Tape run adjustment

(15) Perform tape run alignment of section 6.

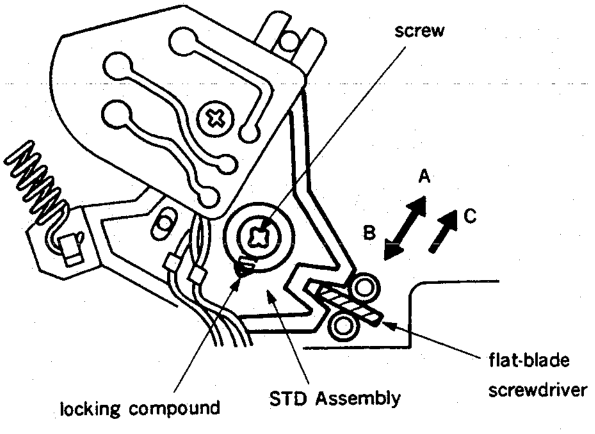
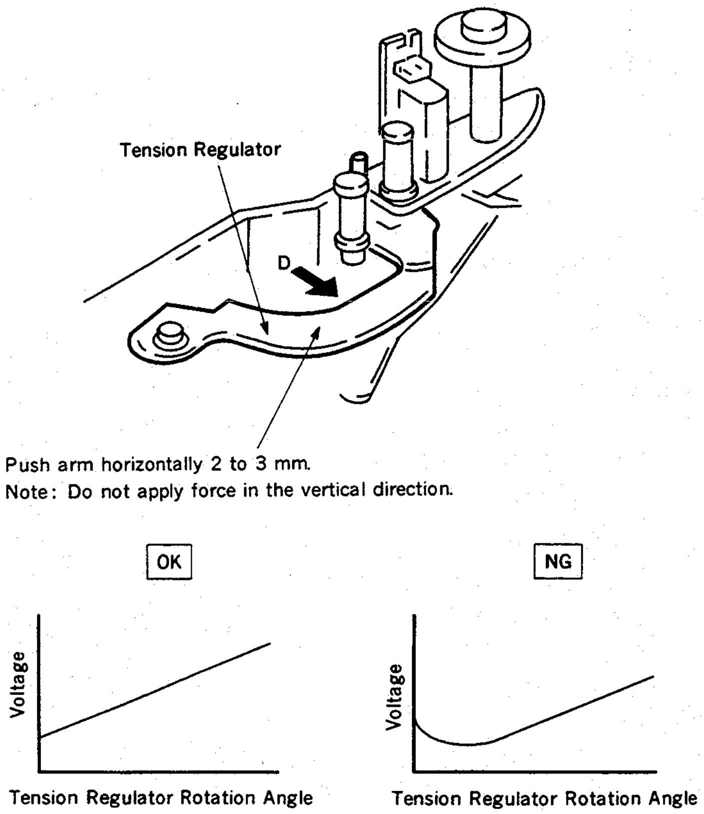

screw
A
B
C
flat-blade screwdriver
locking compound
STD Assembly

Fig. 4

Spec. :
DC voltage of TP301
min. to min. +0.2 V

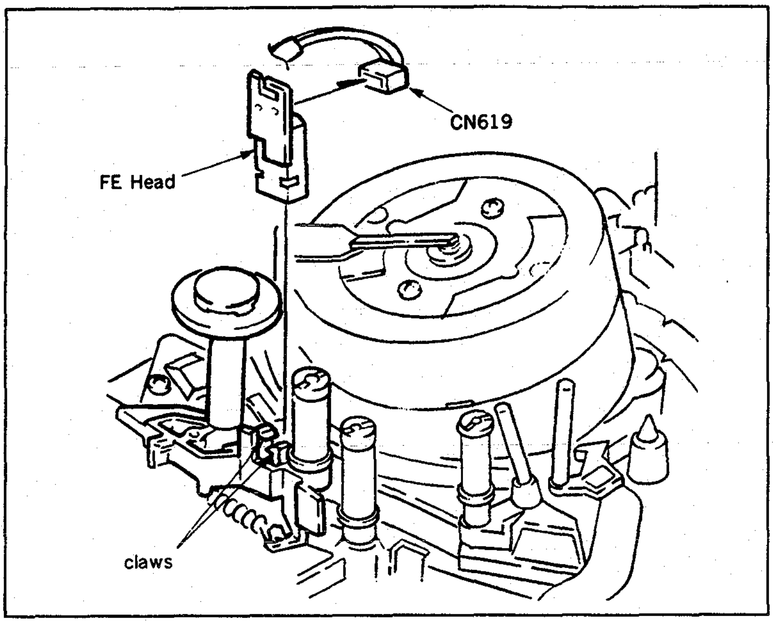

Tension Regulator
D
OK
NG
Voltage
Tension Regulator Rotation Angle
Voltage
Tension Regulator Rotation Angle

Push arm horizontally 2 to 3 mm.
Note: Do not apply force in the vertical direction.

Fig. 5

4-8. FE HEAD REPLACEMENT

(1) Disconnect connector CN619 from the head board.
(2) Remove two claws, then remove the FE head.


CN619
FE Head
claws

Precaution for installation

①Push in the FE head until the two claws lock into place.

4-9. TAPE STABILIZER ASS'Y (TG-4 GUIDE) AND TG-3 GUIDE REPLACEMENT

Tools :
Reference plate (J-6380-080-A)
Master block (J-6380-700-A)
Guide adjustment screwdriver (J-6082-044-A or J-6080-811-A)
Remote controller (SVRM-100, RM-V100, or RM-V200)
Sony oil (7-661-018-18)

(1) Remove the cassette compartment according to sub-section 4-2.
(2) Remove the FE head according to sub-section 4-8.
(3) Remove the tension coil spring.
(4) Remove the stop washer 1.5, then remove the compression coil spring.
(5) Remove the tape stabilizer ass'y from the chassis.

Tape stabilizer (TG-4 guide)

(6) Remove three claws, then remove the TS shaft retainer.
(7) Remove the stop ring, then remove the tape stabilizer.

TG-3 guide

(8) Turn the TG-3 guide counterclockwise with a guide adjustment screwdriver, and remove it.

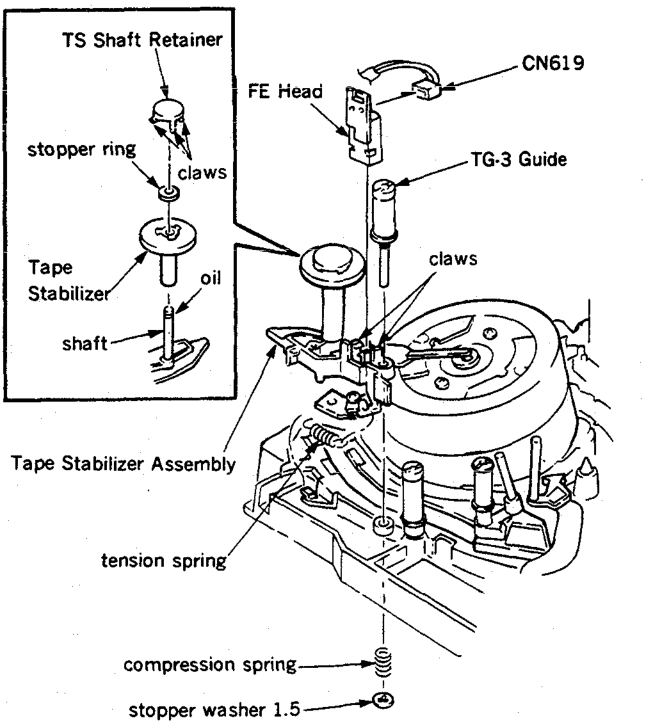

TS Shaft Retainer
stopper ring
claws
Tape Stabilizer
oil
shaft
FE Head
CN619
TG-3 Guide
claws
Tape Stabilizer Assembly
tension spring
compression spring
stopper washer 1.5

Fig. 1

Precautions for installation

①Clean the mounting shaft of the tape stabilizer with cleaning fluid, then apply 1/3 of a drop of Sony oil.

②Install the TG-3 guide to the height shown in Fig. 2.

[Adjustment after replacement]

TG-3 guide height adjustment

(1) Press the PLAY button on the remote controller for the threading completion mode. (See sub-section 4-1-3.)

(2) Clean the mounting face of the reference plate and the four mounting points on the chassis with cleaning fluid.

(3) Install the reference plate on the chassis. (Fig. 3) (If the reference plate moves about when the top of the plate is touched gently with the fingers at a point near where it is installed on the chassis, turn the adjustment screw until the plate no longer moves about.)

(4) Clean the top of the reference plate and the adjustment face of the master block with cleaning fluid.

(5) Set the master block with the stamped L3 face upward, then place it against the TG-3 guide from the direction shown in the drawing, and confirm that the height of the lower flange satisfies the specification. (Figs. 3 and 4)

If the specification is not satisfied

(6) Turn the flange of the TG-3 guide with the guide adjustment screwdriver.

(7) Perform tape run alignment of section 6.

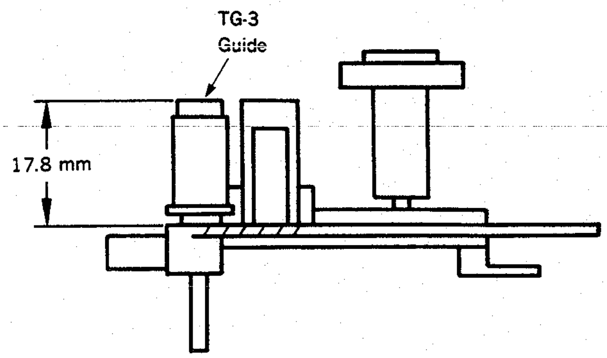

TG-3
Guide
17.8 mm

Fig. 2

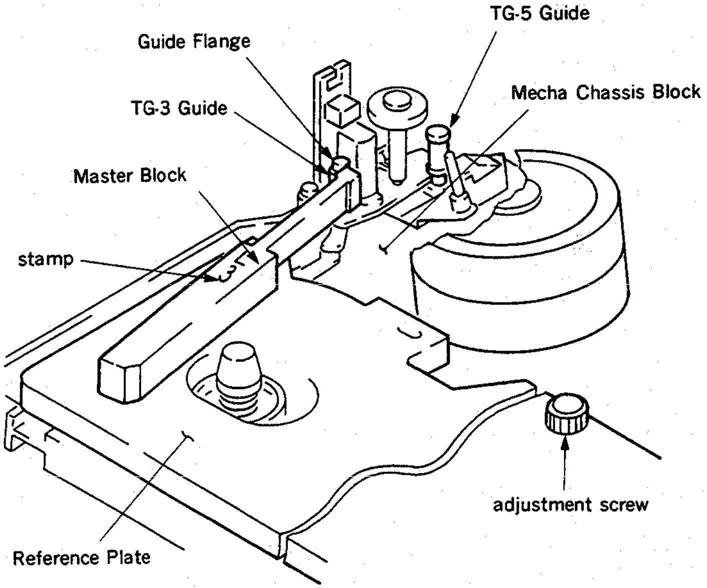

TG-5 Guide
Guide Flange
Mecha Chassis Block
TG-3 Guide
Master Block
stamp
adjustment screw
Reference Plate

Fig. 3

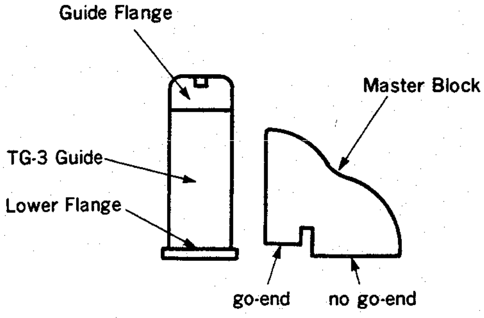

Guide Flange
Master Block
TG-3 Guide
Lower Flange
go-end
no go-end

Fig. 4

Spec.:
The height of the lower flange must pass at the go-end of the master block and stop at the no go-end.

4-10. AUDIO HEAD ASS'Y REPLACEMENT

Tools :

Reference plate (J-6380-080-A)
Master block (J-6380-700-A)
Box screwdriver (width 5.5 mm)
Thickness gauge (9-911-053-00)
Remote controller (SVRM-100, RM-V100, or RM-V200)
MOLYKOTE grease EM-30LG (J-6090-014-A)
or MOLYKOTE grease EM-30L : DOW CORNING Corp.

(1) Remove the cassette compartment according to sub-section 4-2.
(2) Disconnect connectors CN616, 617 and 618 from the AH board.
(3) Remove the tension coil spring A and B.
(4) Remove the AC adjustment screw.
(5) Remove the adjustment nut, then pull out the audio head ass'y.

Precautions for installing the audio head

①Insert part **a** of the torsion coil spring into the hole in the chassis, then insert part **b** into the bend in the ACE base ass'y. (Fig. 1)
②Smear grease onto the bend that the ACE base ass'y touch the AC adjustment screw. (Fig. 1)
③Install the audio head ass'y and the AC adjustment screw to the height shown in Fig. 3.

[Adjustment after replacement]

Audio head zenith adjustment

(1) Push the PLAY button of the remote controller for the threading completion mode. (See sub-section 4-1-3.)
(2) Clean the mounting face of the reference plate and the four mounting points on the chassis with cleaning fluid.
(3) Install the reference plate on the chassis. (Fig. 2) (If the reference plate moves about when the top of the plate is touched gently with the fingers at a point near where it is installed on the chassis, turn the adjustment screw until the plate no longer moves about.)
(4) Clean the top of the reference plate and the adjustment face of the master block with cleaning fluid.
(5) Set the master block with the stamped L1 face upward, then place it gently against the audio head from the direction shown in the drawing (Fig. 2).

Caution : Take care not to damage the surface of the audio head.

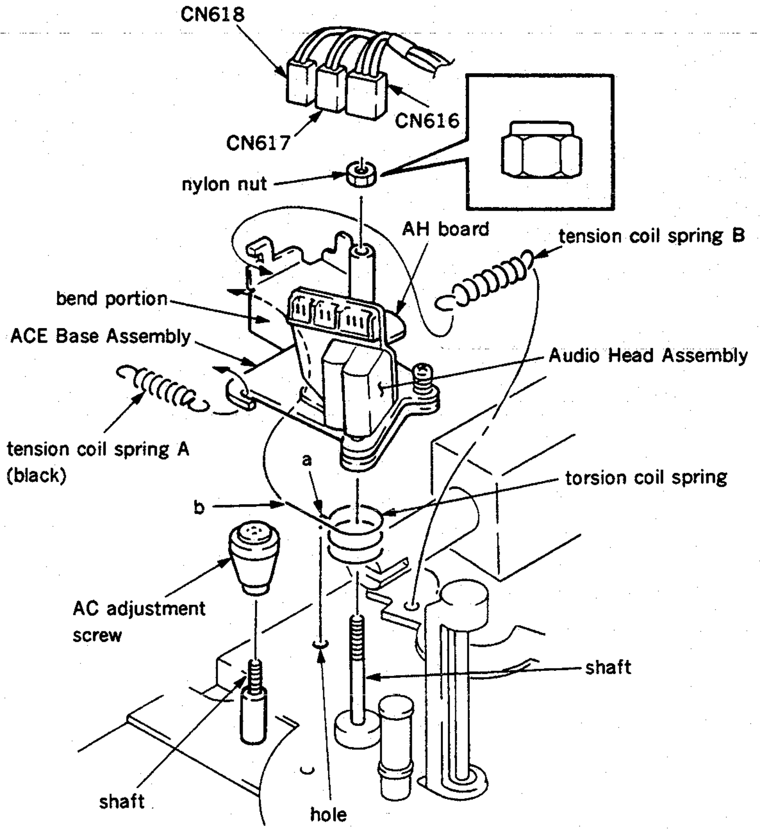

CN618
CN616
CN617
nylon nut
AH board
tension coil spring B
bend portion
ACE Base Assembly
Audio Head Assembly
tension coil spring A
(black)
a
b
torsion coil spring
AC adjustment
screw
shaft
shaft
hole

Fig. 1

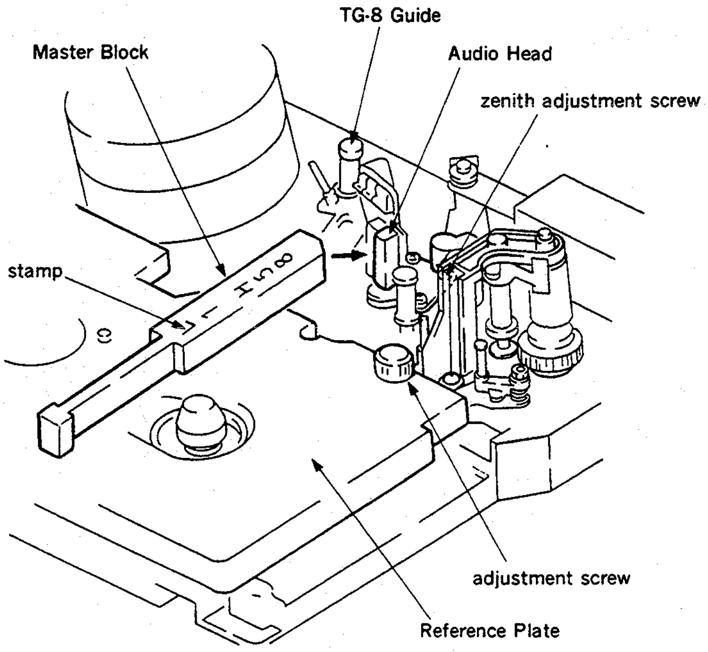

TG-8 Guide
Master Block
Audio Head
zenith adjustment screw
stamp
L1
adjustment screw
Reference Plate

Fig. 2

(6) Tilt the head with the zenith adjustment screw until gap A satisfies the specification. (Fig. 4)

Audio head azimuth adjustment

(7) Change the orientation of the master block and place it against the side of the audio head from the direction shown in the drawing. (Fig. 5)

(8) Turn the azimuth adjustment screw so that gaps B and C satisfy the specification. (Fig. 6)

(9) Confirm that the zenith specification is satisfied.

If the specification is not satisfied

(10) Repeat the zenith and azimuth adjustments until the relevant specifications are satisfied.

Tape run adjustment

(11) Perform tape run alignment of section 6.
- Upon completion of adjustment, smear locking compound onto the AC adjustment screw, zenith adjustment screw and the azimuth adjustment screw. (Fig. 7)

Electrical adjustment

(12) Perform audio system alignment as follows:
- 9-9. LAU PB Level Adjustment
- 9-10. LAU PB Frequency Respons Adjustment
- 9-11. LAU REC Level Adjustment
- 9-12. LAU REC Frequency Respons Adjustment

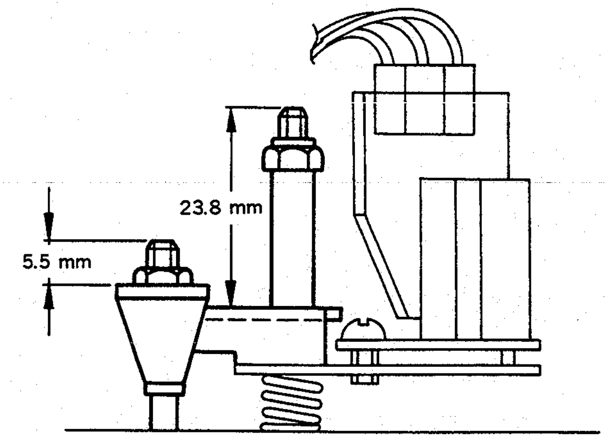


Fig. 3

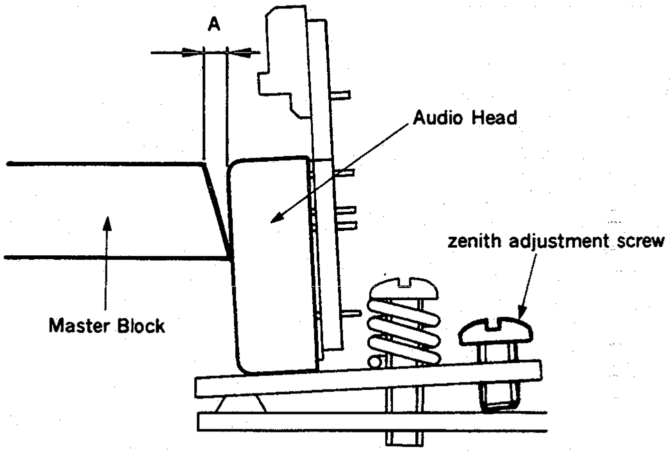

A
Audio Head
zenith adjustment screw
Master Block

Fig. 4

Spec.:
gap A=0 to 0.05 mm

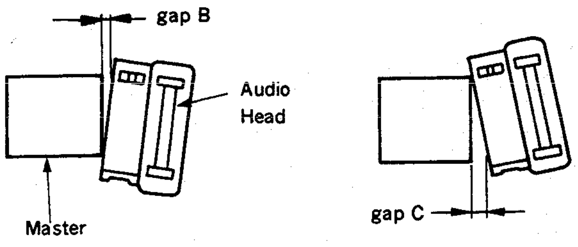

gap B
Audio
Head
Master
Block
gap C

Fig. 6

Spec.:
gap B, C=0 to 0.05 mm

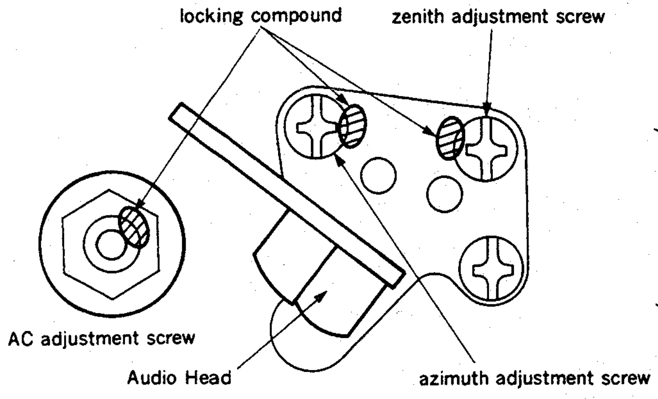

locking compound
zenith adjustment screw
AC adjustment screw
Audio Head
azimuth adjustment screw

Fig. 7

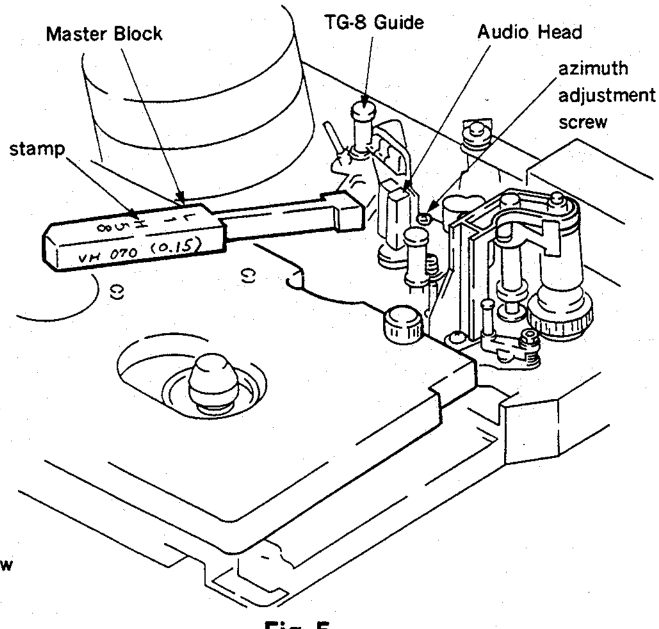

Master Block
TG-8 Guide
Audio Head
azimuth
adjustment
screw
stamp
VH 070 (0.15)

Fig. 5

4-11. TG-9 GUIDE REPLACEMENT

Tools :

Reference plate (J-6380-080-A)
Master block (J-6380-700-A)
Guide adjustment screwdriver (J-6082-044-A or J-6080-811-A)
Hex wrench screwdriver (width 0.89 mm)
Remote controller (SVRM-100, RM-V100, or RM-V200)

(1) Remove the cassette compartment according to sub-section 4-2.
(2) Loosen the set screw by the hex wrench. (Fig. 1)
(3) Rotate the TG-9 guide counterclockwise with the guide adjustment screwdriver, and remove it. (Fig. 1)

[Installation and height adjustment]

(1) Press the PLAY button on the remote controller for the threading completion mode. (See sub-section 4-1-3.)
(2) Clean the mounting face of the reference plate and the four mounting points on the chassis with cleaning fluid.
(3) Install the reference plate on the chassis. (Fig. 3) (If the reference plate moves about when the top of the plate is touched gently with the fingers at a point near where it is installed on the chassis, turn the adjustment screw until the plate no longer moves about.)
(4) Clean the top of the reference plate and the adjustment face of the master block with cleaning fluid.
(5) Set the master block with the stamped L1 face upward, then place it against the TG-9 guide from the direction shown in the drawing, and tighten the set screw until the lower flange is roughly the same height as the go-end of the master block. (Figs. 2 and 3)
(Set screw tightening torque : 78×10^{-3} to 98×10^{-3} N•m (0.8 to 1 kg•cm))
(6) Turn the flange of the guide with the guide adjustment screwdriver until the required specification is satisfied. (Fig. 3)
(7) Perform tape run alignment of section 6.

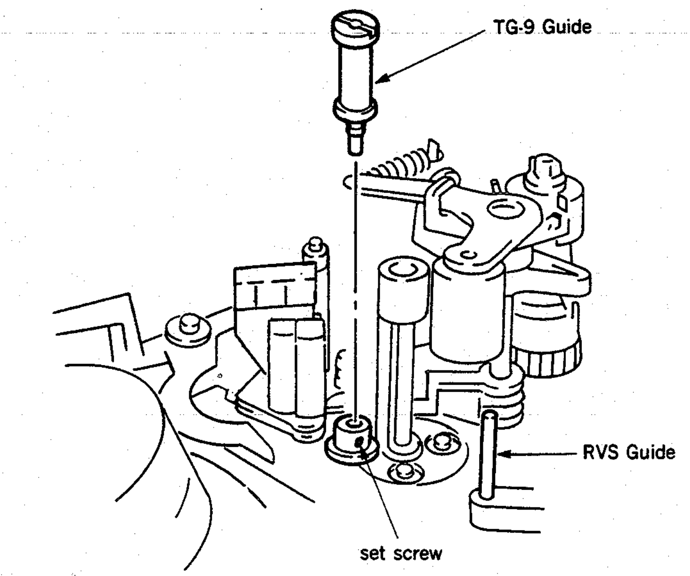

TG-9 Guide
RVS Guide
set screw

Fig. 1

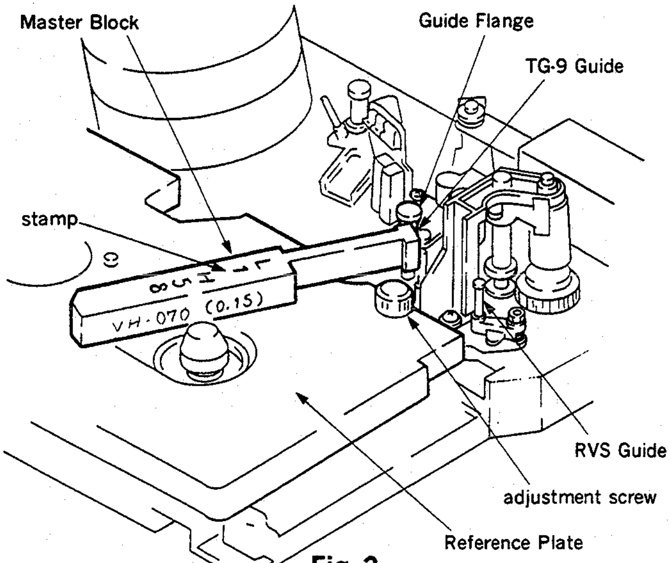

Master Block
Guide Flange
TG-9 Guide
stamp
VH-070 (0.15)
RVS Guide
adjustment screw
Reference Plate

Fig. 2

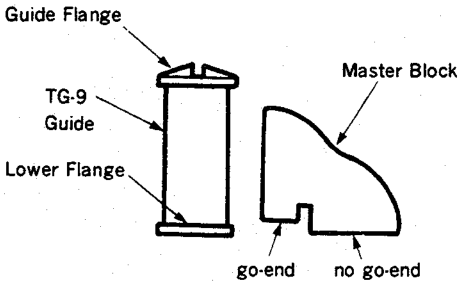

Guide Flange
Master Block
TG-9 Guide
Lower Flange
go-end
no go-end

Fig. 3

Spec. :
The height of the lower flange must pass at the go-end of the master block and stop at the no go-end.

4-12. PINCH ROLLER BLOCK ASS'Y AND ELEVATOR CAM REPLACEMENT

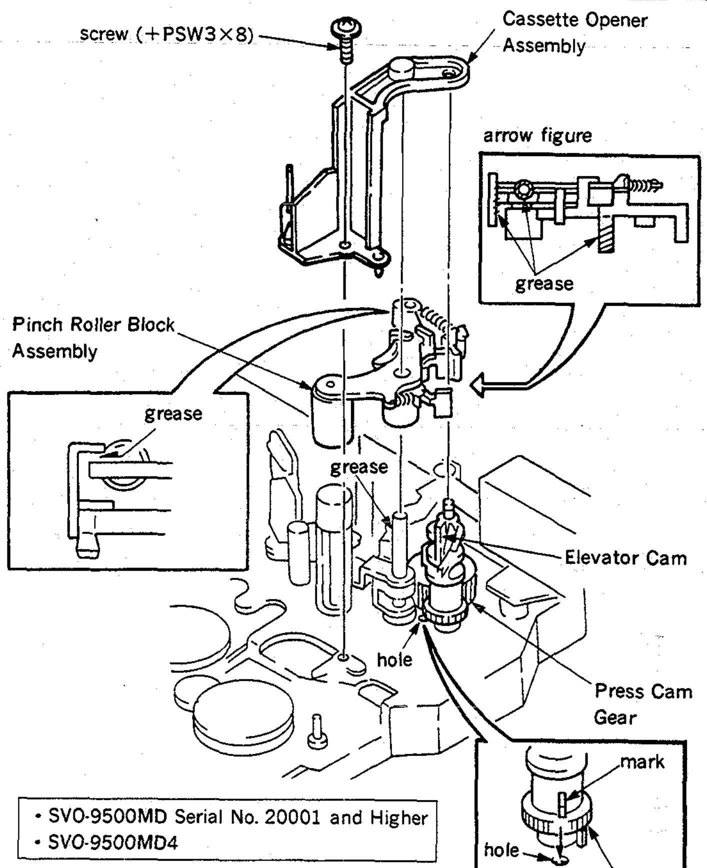
Tool :
MOLYKOTE grease EM-30LG (J-6090-014-A)
or MOLYKOTE grease EM-30L : DOW CORNING Corp.

(1) When Fig. 1, remove the screw, then remove the cassette opener ass'y.
When Fig. 2, remove two claws, then remove the elevator cap.
(2) Pull out the pinch roller block ass'y.
(3) Pull out the elevator cam.

Precautions for installation

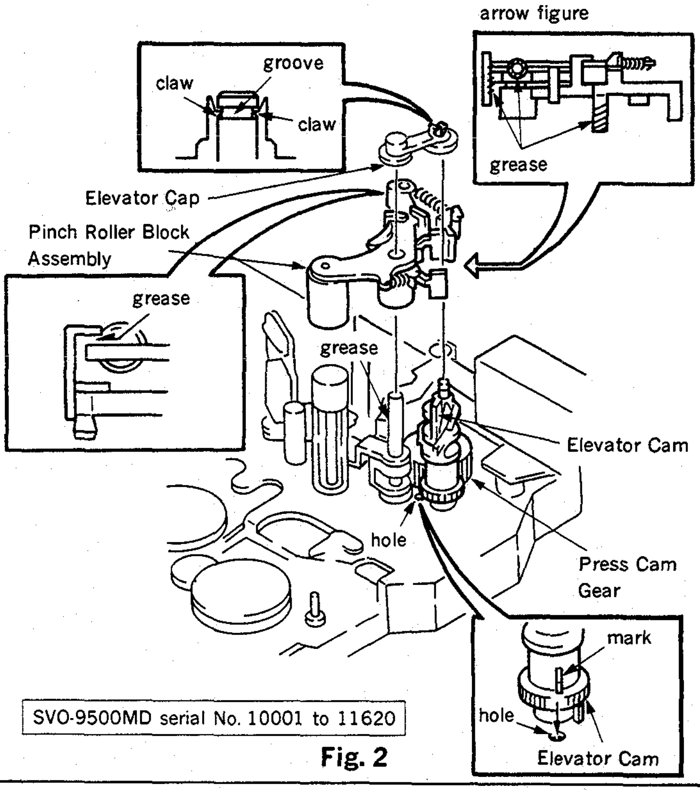
①Align the mark on the elevator cam with the hole in the chassis, then engage the elevator cam with the press cam gear, and install it on the shaft. (As a result, the engagement phases of the elevator cam and press cam gear will coincide.)

②Smear the parts of the pinch roller block ass'y indicated by the arrows (five) with MOLYKOTE grease.


screw (+PSW3×8)
Cassette Opener Assembly
arrow figure
grease
Pinch Roller Block Assembly
grease
grease
Elevator Cam
hole
Press Cam Gear
mark
hole
Elevator Cam

• SVO-9500MD Serial No. 20001 and Higher
• SVO-9500MD4

Fig. 1

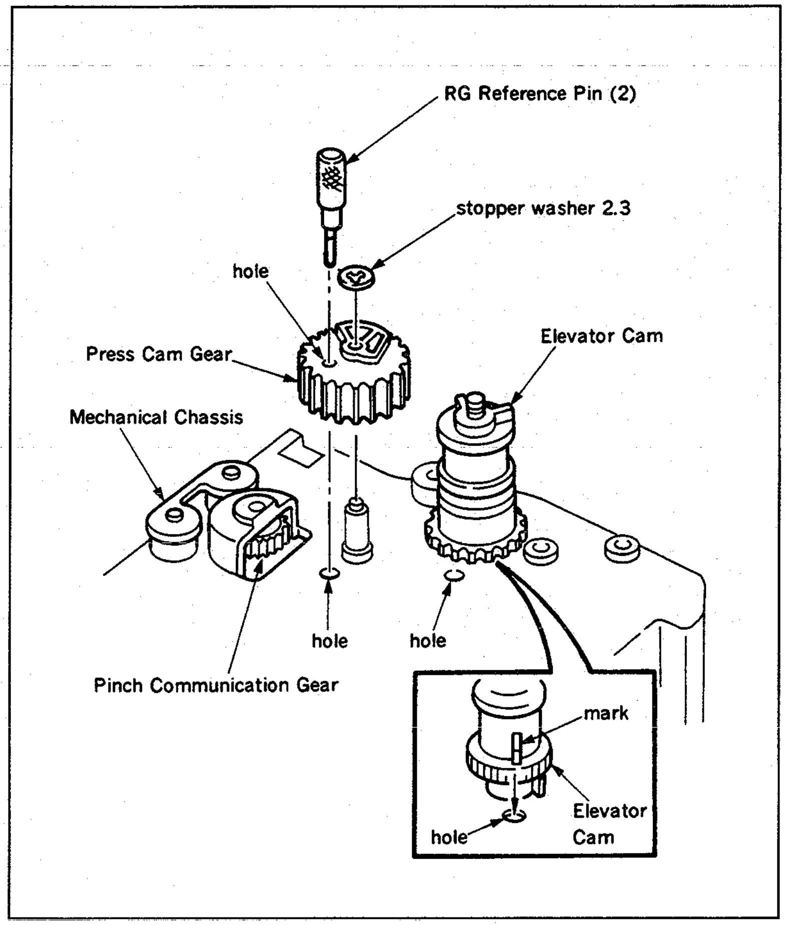

arrow figure
groove
claw
claw
grease
Elevator Cap
Pinch Roller Block Assembly
grease
grease
Elevator Cam
hole
Press Cam Gear
mark
hole
Elevator Cam

SVO-9500MD serial No. 10001 to 11620

Fig. 2

4-13. PRESS CAM GEAR REPLACEMENT

Tool :
RG reference pin (2) (J-6380-050-A)


RG Reference Pin (2)
stopper washer 2.3
hole
Elevator Cam
Press Cam Gear
Mechanical Chassis
hole
hole
Pinch Communication Gear
mark
Elevator Cam
hole

(1) Remove the pinch roller block ass'y and Pinch solenoid ass'y according to sub-sections 4-12 and 4-31.

(2) Remove the stop washer 2.3, then remove the press cam gear.

Precautions for installation

①Pass RG reference pin (2) through the hole in the press cam gear. Next, align it with the hole in the chassis, then engage the press cam gear with the elevator cam and the pinch communication gear, and install it on the shaft.
(By aligning the pin with the holes in the gear, the meshing phases of the press cam gear, elevator cam and pinch communication gear will coincide.)

②The mark on the elevator cam shown in the figure must coincide with the hole in the chassis.

4-14. RVS ARM ASS'Y (RVS GUIDE) AND RVS CAM GEAR REPLACEMENT

Tools :

RG reference pin (1) (J-6380-040-A)
Reference plate (J-6380-080-A)
Master block (J-6380-700-A)
Box screwdriver (width 5.5 mm)
Remote controller (SVRM-100, RM-V100, or RM-V200)
Sony oil (7-661-018-18)

(1) Remove the cassette compartment according to sub-section 4-2.
(2) Remove the E ring, then pull out the RVS arm ass'y. (Fig. 2)
(3) Remove the adjustment nut, then remove the guide base ass'y and the compression coil spring. (Fig. 1)
(4) Remove the stop washer 2.3, then pull out the RVS cam gear. (Fig. 2)

Precautions for installation

①Insert the projection on the guide base ass'y into the hole in the RVS arm, then install the guide base ass'y. (Fig. 1)

②Pass RG reference pin (1) through the hole in the RVS cam gear, then align it with hole B in the chassis, engage the RVS cam gear with the RVS relay gear, then install the gears on the shafts. (Fig. 2). Also, confirm that the hole in the press cam gear coincides with the hole in the chassis. (Refer to sub-section 4-13.)
(By aligning the pin with the holes in the gear, the meshing phases of the drive gears will coincide.)

③Clean the mounting shaft of the RVS arm ass'y with cleaning fluid, then apply 1/2 a drop of Sony oil. (Fig. 2)

④Insert part **a** of the torsion coil spring into hole A in the chassis, then insert part **b** into the bend in the RVS arm ass'y. (Fig. 2)

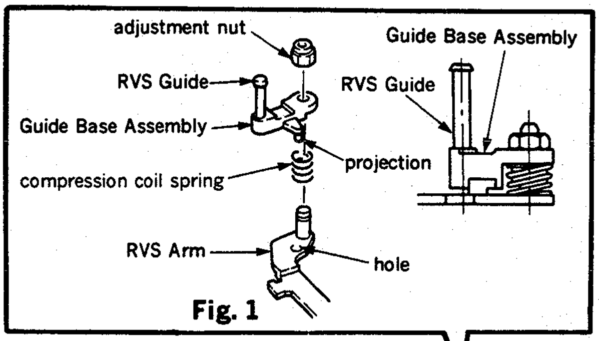

adjustment nut
Guide Base Assembly
RVS Guide
RVS Guide
Guide Base Assembly
projection
compression coil spring
RVS Arm
hole

Fig. 1

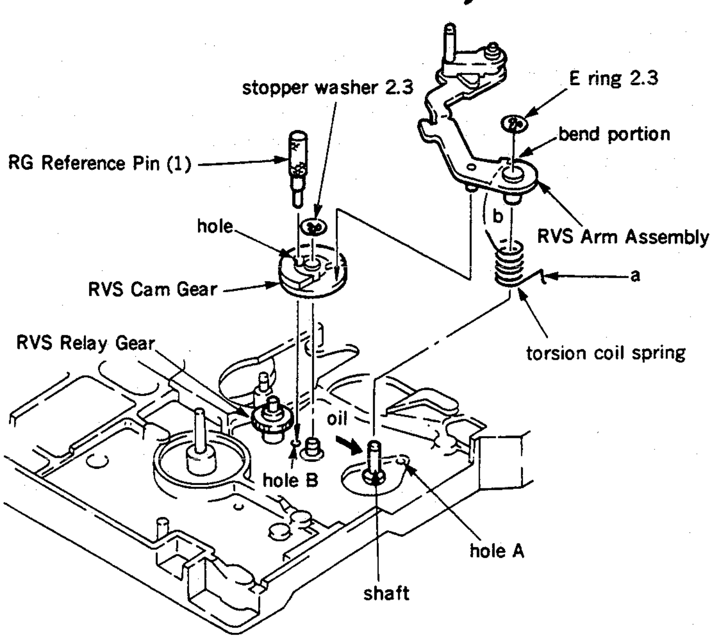

stopper washer 2.3
E ring 2.3
bend portion
RG Reference Pin (1)
hole
b
RVS Arm Assembly
a
RVS Cam Gear
torsion coil spring
RVS Relay Gear
oil
hole B
hole A
shaft

Fig. 2

[Adjustment after replacement]

RVS guide height adjustment

(1) Press the PLAY button on the remote controller for the threading completion mode. (See sub-section 4-1-3.)

(2) Clean the mounting face of the reference plate and the four mounting faces on the chassis with cleaning fluid.

(3) Install the reference plate on the chassis. (Fig. 3) (If the reference plate moves about when the top of the plate is touched gently with the fingers at a point near where it is installed on the chassis, turn the adjustment screw until the plate no longer moves about.)

(4) Clean the top of the reference plate and the adjustment face of the master block with cleaning fluid.

(5) Set the master block with the stamped L1 face upward, then place it against the RVS guide from the direction shown in the figure. (Fig. 3)

(6) Using a box screwdriver, turn the adjustment nut until the specification is satisfied. (Fig. 4)

(7) Perform tape run adjustment of section 6.

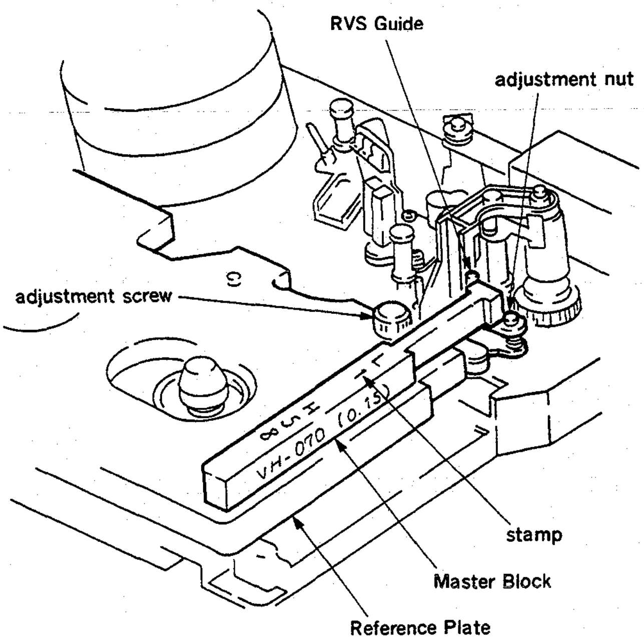

RVS Guide
adjustment nut
adjustment screw
VH-070 (0.15)
stamp
Master Block
Reference Plate

Fig. 3

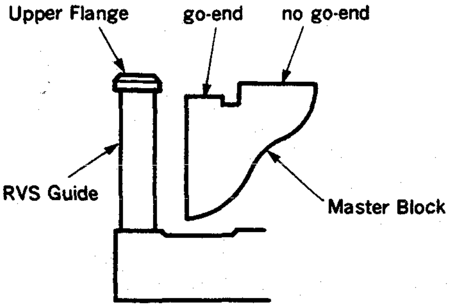

Upper Flange
go-end
no go-end
RVS Guide
Master Block

Fig. 4

Spec.:
The height of the upper flange must pass at the go-end of the master block and stop at the no go-end.

4-15. FR DRIVE GEAR AND RVS RELAY GEAR REPLACEMENT

Tools :
RG reference pin (1) (J-6380-040-A)
RG reference pin (2) (J-6380-050-A)

(1) Remove the cassette compartment according to sub-section 4-2.
(2) Remove the RVS arm ass'y and the RVS cam gear according to sub-section 4-14.
(3) Remove each of stop washer 2.3, then remove the FR drive gear and the RVS relay gear. (Fig. 1)

Precautions for installation

Gear installation sequence

①Install the RVS relay gear on the shaft, taking care that it is facing the right direction. (Fig. 3)
②Pass RG reference pin (2) through the hole in the FR drive gear, then align it with the hole in the mode gear (2), engage the FR drive gear with the RVS relay gear, and install it on the shaft. (Fig. 1)
③Using RG reference pin (1), engage the RVS cam gear with the RVS relay gear, then install it on the shaft according to subsection 4-14. (Fig. 2)
(By aligning the pin with the holes in the gears, the meshing phases of the drive gears will coincide.)

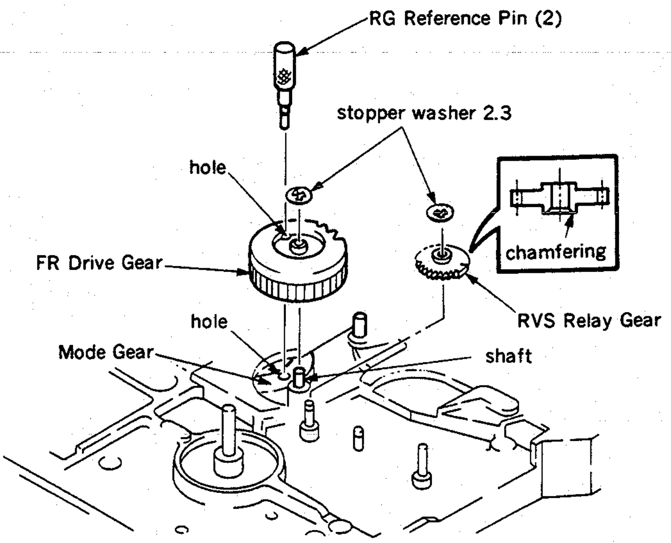

RG Reference Pin (2)
stopper washer 2.3
hole
chamfering
FR Drive Gear
hole
RVS Relay Gear
Mode Gear
shaft

Fig. 1

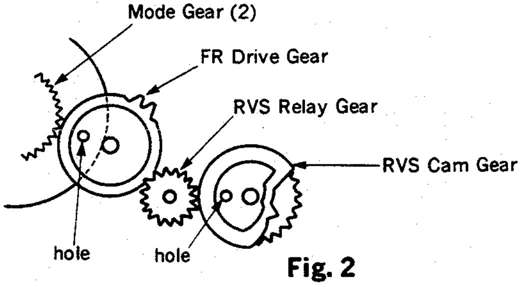

Mode Gear (2)
FR Drive Gear
RVS Relay Gear
RVS Cam Gear
hole
hole

Fig. 2

4-16. FR GEAR REPLACEMENT

(1) Remove the FR coil spring.
(2) Remove stop washer 2.3, then pull out the FR gear.

Precautions for installation

①Align the gear part of the FR gear with the position shown in Fig. 2.

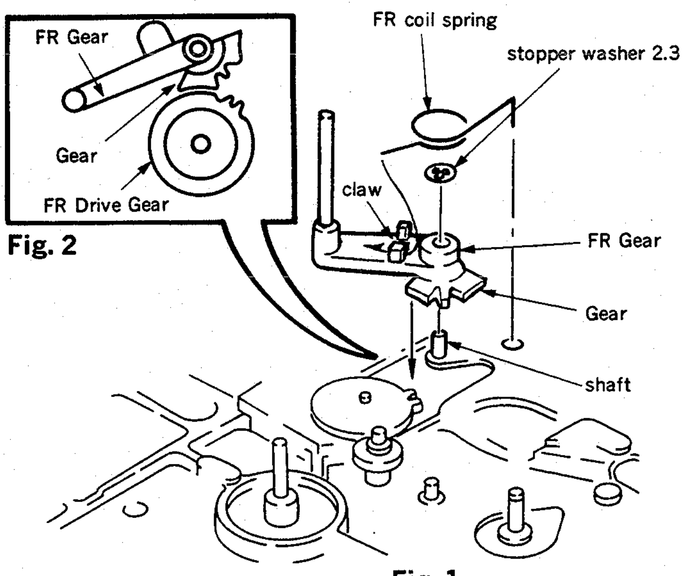

FR Gear
Gear
FR Drive Gear
FR coil spring
stopper washer 2.3
claw
FR Gear
Gear
shaft

Fig. 2

Fig. 1

4-17. REEL TABLE ASS'Y REPLACEMENT

Tools :
Reference plate (J-6380-080-A)
Reel table height adjustment tool (J-6380-090-A)
Hex wrench screwdriver (width 1.5 mm)

(1) Remove the cassette compartment according to sub-section 4-2.
(2) Remove the set screw with the hex wrench.
(3) Pull out the reel table ass'y from the reel shaft.

[Reel table height adjustment]

(1) Clean the mounting face of the reference plate and the four mounting faces on the chassis with cleaning fluid.
(2) Install the reference plate on the chassis. (Fig. 2) (If the reference plate moves about when the top of the plate is touched gently with the fingers at a point near where it is installed on the chassis, turn the adjustment screw until the plate no longer moves about.)
(3) Clean the top of the reference plate and the adjustment face of the reel table height adjustment tool with cleaning fluid.
(4) Set the reel table height adjustment tool with the stamped side upward, then install it on the reference plate. (Fig. 2)
(5) Perform adjustment so that the height of the S side reel table (or T side reel table) satisfies the specification at position **a**, then rotate the table 90° in the direction of the arrow, and perform adjustment so that the height of the reel table satisfies the specification at position **b**. (Figs. 2 and 3)

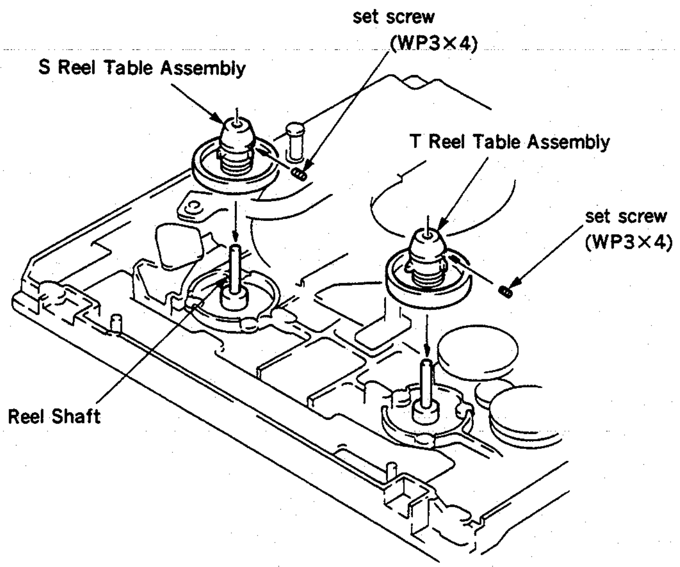

set screw
(WP3×4)
S Reel Table Assembly
T Reel Table Assembly
set screw
(WP3×4)
Reel Shaft

Fig. 1

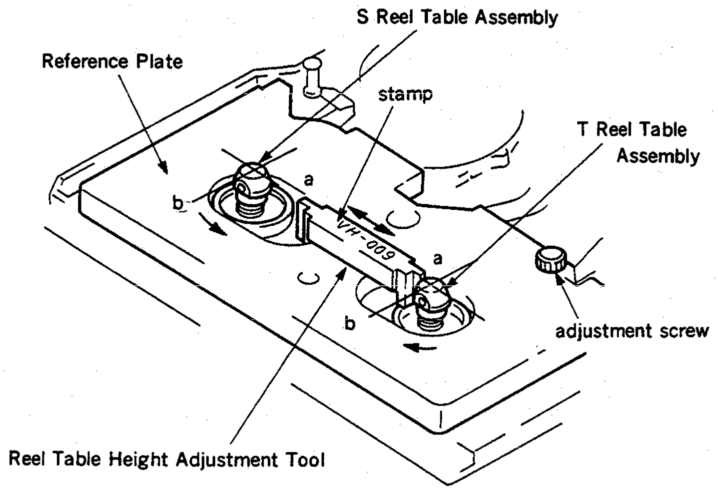

S Reel Table Assembly
Reference Plate
stamp
T Reel Table Assembly
a
b
VH-009
a
b
adjustment screw
Reel Table Height Adjustment Tool

Fig. 2

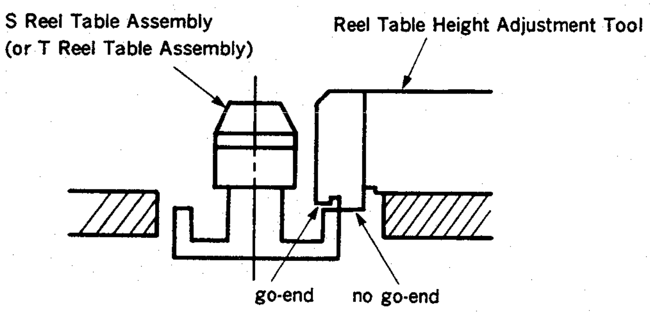

S Reel Table Assembly
(or T Reel Table Assembly)
Reel Table Height Adjustment Tool
go-end
no go-end

Fig. 3

Spec. :
The height of the S side (T side) reel table must pass at the go-end of the reel table height adjustment tool and stop at the no-go end.

4-18. REEL BRAKE ASS'Y REPLACEMENT

(1) Remove the cassette compartment according to sub-section 4-2.
(2) Remove the harness of the LE-80 board from the claw of the reel brake ass'y. (surface of chassis) (Fig. 1)
(3) Disconnect connector CN656W of the solenoid harness from the HN-160 board. (surface of chassis) (Fig. 1)
(4) Remove two screws, then remove the reel brake ass'y. (back side of chassis) (Fig. 1)
(5) Remove the spring, then the claw of the M clamp, then remove the brake arm (S) ass'y and the brake arm (T) ass'y. (Fig. 2)
(6) Raise part A of the B slider in the direction of arrow B, then remove the claw from the iron core of the solenoid, and pull out the B slider in the direction of arrow C. (Fig. 2)
(7) Remove two screws and two washers, then remove the solenoid. (Fig. 2)

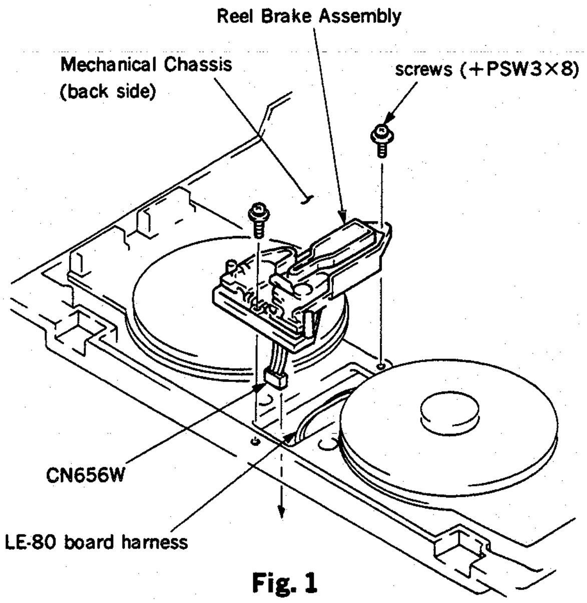

Reel Brake Assembly
Mechanical Chassis
(back side)
screws (+PSW3×8)
CN656W
LE-80 board harness

Fig. 1

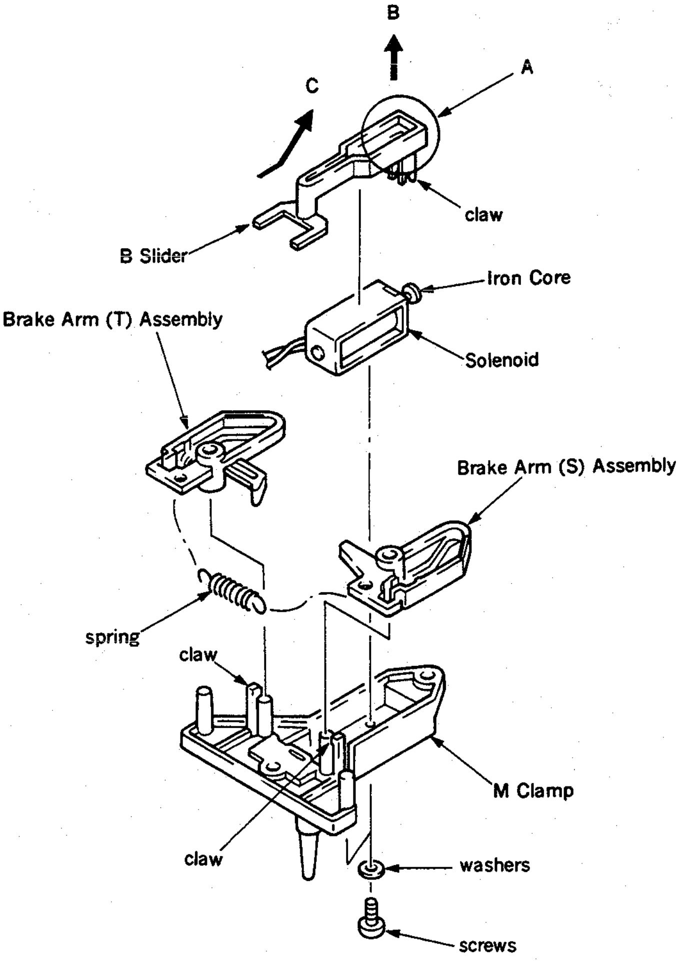

B
C
A
claw
B Slider
Iron Core
Brake Arm (T) Assembly
Solenoid
Brake Arm (S) Assembly
spring
claw
M Clamp
claw
washers
screws

Fig. 2

4-19. REEL MOTOR REPLACEMENT

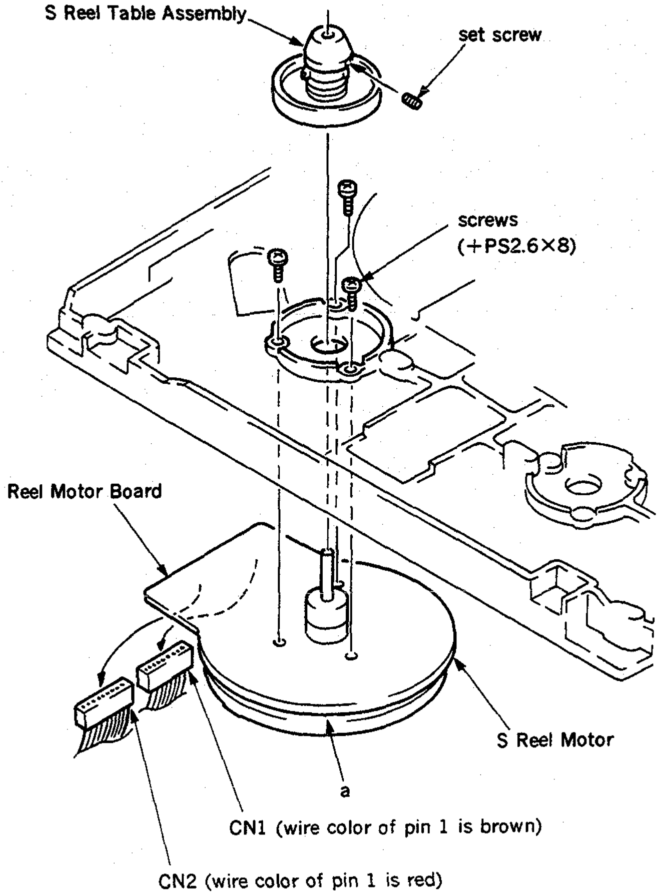
Tools :
Reference plate (J-6380-080-A)
Reel table height adjustment tool (J-6380-090-A)
Hex wrench screwdriver (width 1.5 mm)

- The procedure of replacing the reel motor is the same for both the S side and the T side. Here, the procedure of replacing the S side reel motor is described.

(1) Remove the cassette compartment according to sub-section 4-2.
(2) Remove the S side reel table ass'y according to sub-section 4-17.
(3) Disconnect two connectors CN1 and CN2 from the reel motor board.
(4) Remove three screws, then remove the S side reel motor.

Note : Do not touch the outer periphery (a part) of the reel motor with the fingers.

[Adjustment after installation]
(1) Adjust the height of the S side reel table ass'y according to sub-section 4-17.


S Reel Table Assembly
set screw
screws
(+PS2.6×8)
Reel Motor Board
S Reel Motor
a
CN1 (wire color of pin 1 is brown)
CN2 (wire color of pin 1 is red)

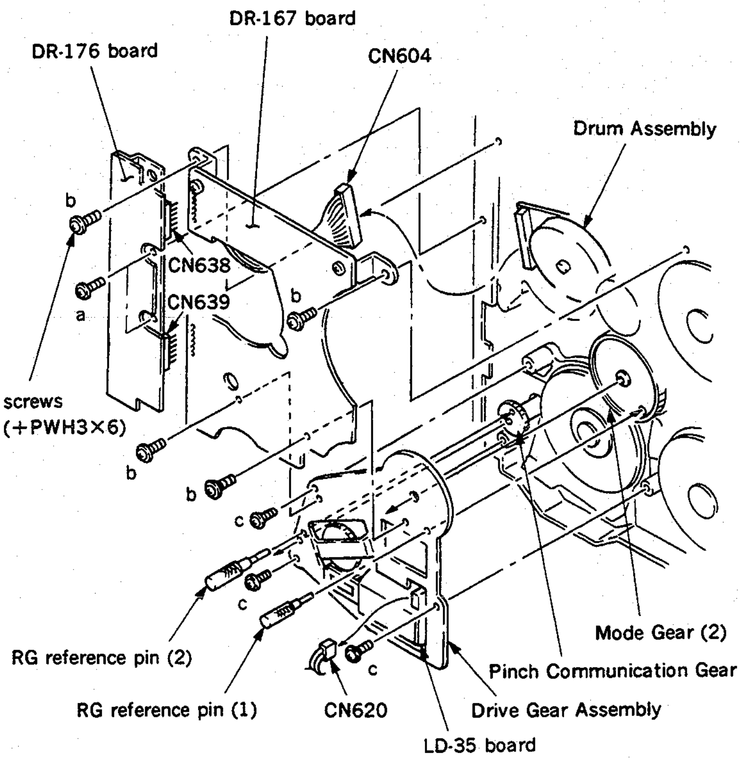
4-20. DRIVE GEAR ASS'Y REPLACEMENT

Tools :
RG reference pin (1) (J-6380-040-A)
RG reference pin (2) (J-6380-050-A)

(1) Remove the LDB brake ass'y from the drive gear ass'y using the procedure in sub-section 4-32.
(2) Remove two screws (a), then disconnect two connectors CN638 and CN639 from the DR-167 board, and remove the DR-176 board.
(3) Disconnect connector CN604 from the drum ass'y.
(4) Disconnect connector CN620 from the LD-35 board.
(5) Remove four screws (b), then remove the DR-176 board.
(6) Remove three screws (c), then remove the drive gear ass'y.
Take care not to rotate the mode gear (2) and the pinch communication gear more than one revolution after removing the drive gear ass'y.

Precautions for installation

①Pass RG reference pin (1) and RG reference pin (2) through the holes shown in the drawing of the drive gear ass'y, then align the pins with the holes in the mode gear (2) and pinch communication gear, respectively, and install the drive gear ass'y. (By aligning the pins with the holes in the gears, the meshing phases of the drive gear system will coincide.)


DR-167 board
DR-176 board
CN604
Drum Assembly
b
CN638
CN639
a
b
screws
(+PWH3×6)
b
b
c
c
Mode Gear (2)
RG reference pin (2)
c
Pinch Communication Gear
RG reference pin (1)
CN620
Drive Gear Assembly
LD-35 board

4-20-1. Cam Motor Ass'y Replacement

(1) Remove the screw, then remove the cam motor ass'y. (Fig. 1)

Precautions for installation

①Align the groove of the cam motor ass'y with part **a** of the drive gear ass'y. (Fig. 1)

②Align the hole in the cam motor ass'y with the projection on the drive gear ass'y. (Fig. 1)

③Set the cam motor parallel to the **b** face of the drive gear ass'y, then screw it fixed. (Fig. 2)

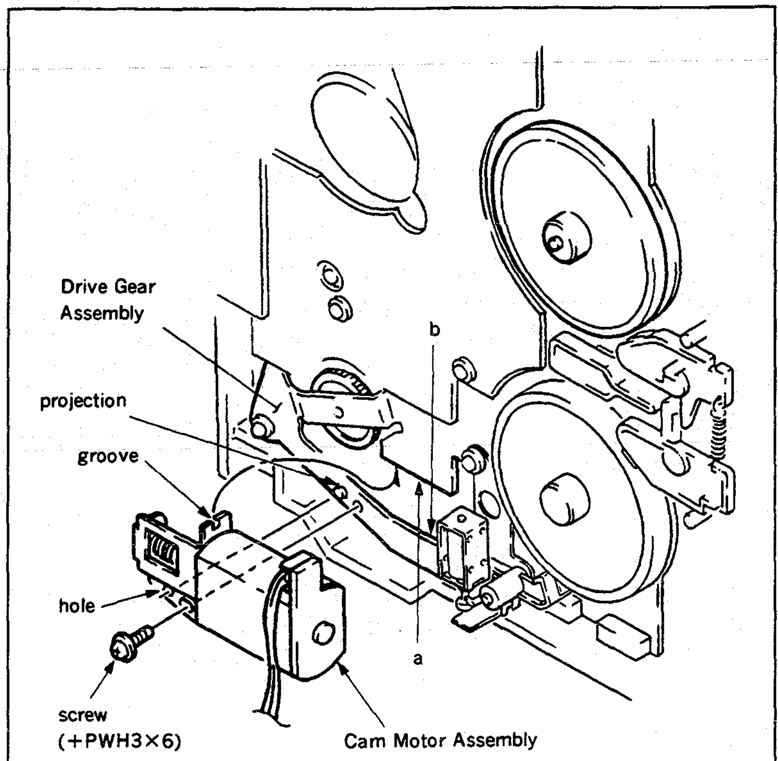

Drive Gear Assembly
b
projection
groove
hole
a
screw (+PWH3×6)
Cam Motor Assembly

Fig. 1

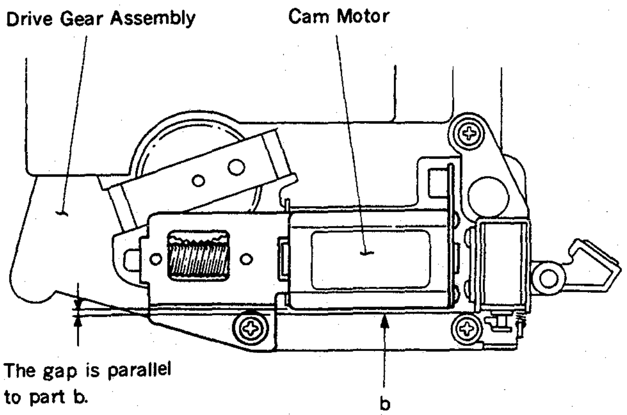

Drive Gear Assembly
Cam Motor
The gap is parallel to part b.
b

Fig. 2

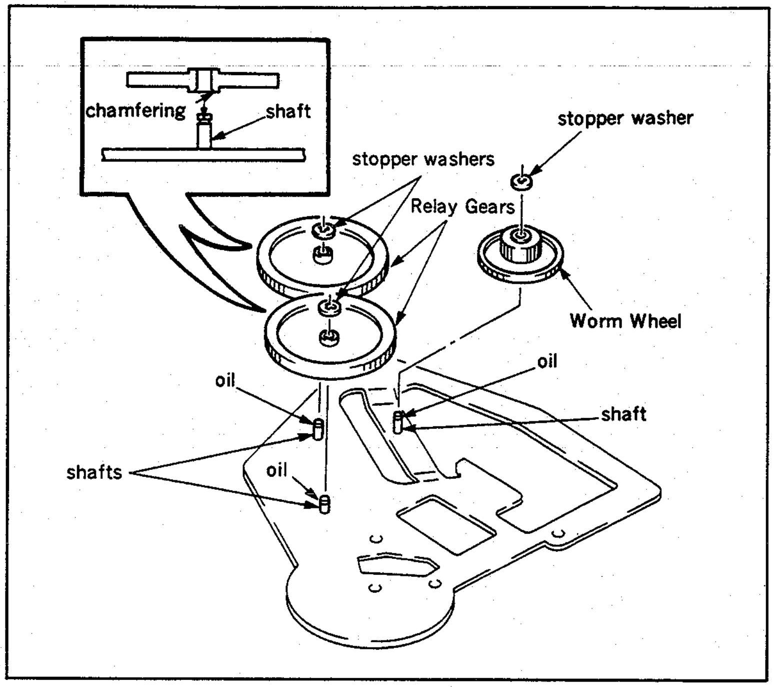
4-20-2. Relay Gears and Worm Wheel Replacement

Tool :
Sony oil (7-661-018-18)

(1) Remove the stop washer, then remove the relay gear or the worm wheel.

Precautions for installation

①Clean the shafts with cleaning fluid, then apply 1/2 a drop of Sony oil.


chamfering
shaft
stopper washer
stopper washers
Relay Gears
Worm Wheel
oil
shaft
oil
shafts
oil

4-21. MODE GEAR (2) ASS'Y REPLACEMENT

Tool :
RG reference pin (2) (J-6380-050-A)

(1) Remove the drive gear ass'y according to sub-section 4-20.
(2) Remove the stop washer, then remove the mode gear (2) ass'y from the shaft. (Fig. 1)

Precautions for installation

①Push the loading gear (right) in the direction of arrow A. Pass RG reference pin (2) through the hole in the mode gear (2) ass'y, then align it with the ※ mark on the chassis, then engage the mode gear ass'y with the FR drive gear, and install it. (Figs. 1 and 2)
(By aligning the pin with the holes in the gears, the meshing phases of the mode gear ass'y and the FR drive gear will coincide.)

②Align the meshing phases of the gears, and install the drive gear ass'y according to sub-section 4-20.

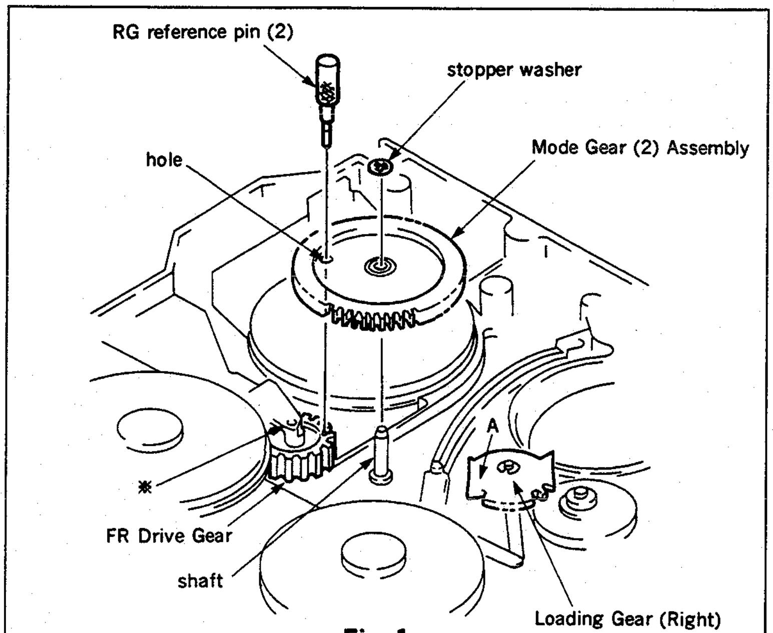

RG reference pin (2)
stopper washer
hole
Mode Gear (2) Assembly
A
※
FR Drive Gear
shaft
Loading Gear (Right)

Fig. 1

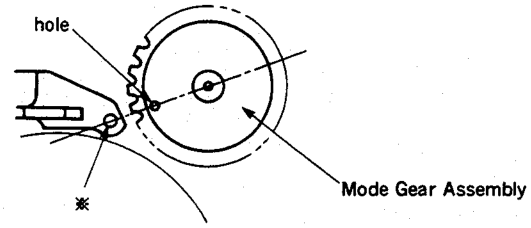

hole
※
Mode Gear Assembly

Fig. 2

4-22. LOADING GEAR (RIGHT) ASS'Y REPLACEMENT

Tool :
MOLYKOTE grease EM-30LG (J-6090-014-A)
or MOLYKOTE grease EM-30L : DOW CORNING Corp.

(1) Remove the drive gear ass'y according to sub-section 4-20.
(2) Remove the mode gear (2) ass'y according to sub-section 4-21.
(3) Rotate the gear part of the loading gear (right) by hand in the direction of the arrow to the position shown in Fig. 1.
(4) Remove two E rings, then remove the loading gear (right) ass'y. (Fig. 2)

Note : Take care not to deform the arm of the loading gear (right) ass'y.

Precautions for installation

①Align the mark on the loading gear (left) with the center point between two teeth on the loading gear (right), then install the chassis shaft and the shaft of the shuttle (right). (Fig. 3)
②Smear a small amount of grease to the part of the loading gear (right) ass'y indicated in the figure. (Fig. 2)
③Align the engagement phases of the mode gear (2) ass'y and the drive gear ass'y ,then install the gear ass'ys, according to sub-sections 4-21 and 4-20.

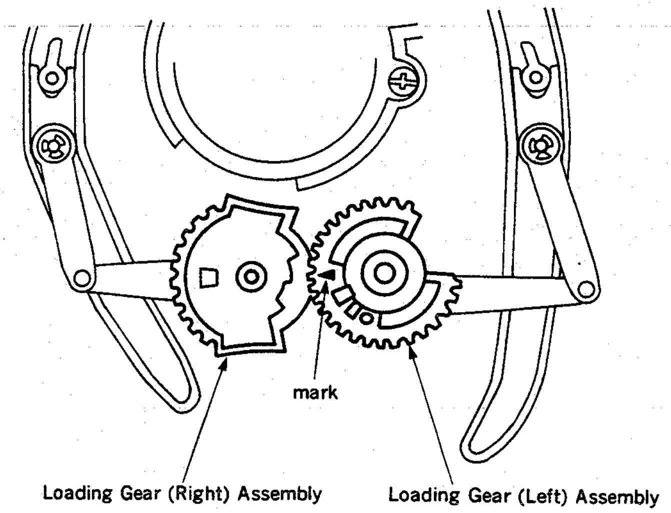

mark
Loading Gear (Right) Assembly
Loading Gear (Left) Assembly

Fig. 1

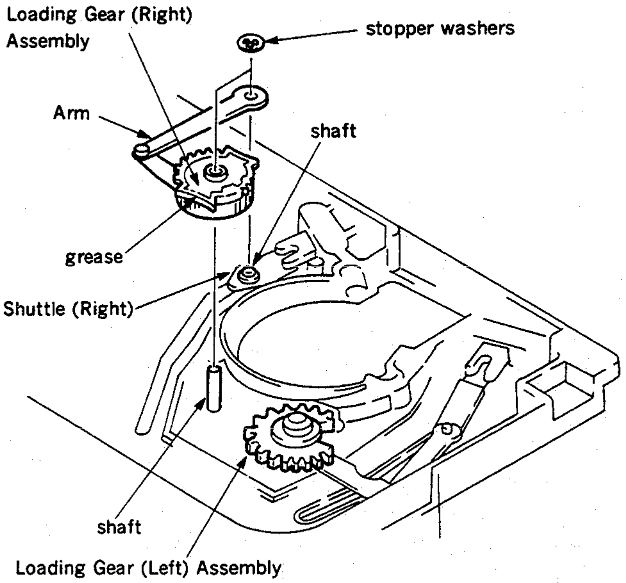

Loading Gear (Right) Assembly
stopper washers
Arm
shaft
grease
Shuttle (Right)
shaft
Loading Gear (Left) Assembly

Fig. 2

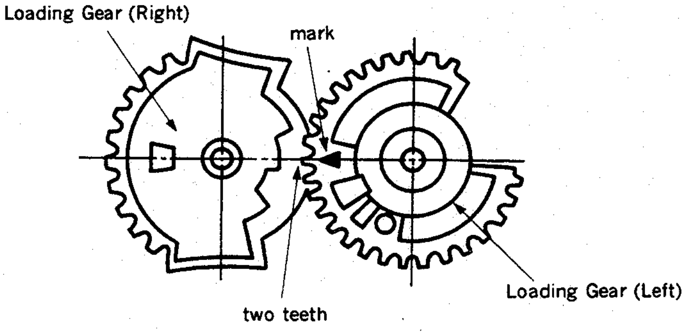

Loading Gear (Right)
mark
Loading Gear (Left)
two teeth

Fig. 3

4-23. LOADING GEAR (LEFT) ASS'Y REPLACEMENT

(1) Remove the cam motor ass'y according to sub-section 4-20-1. (Fig. 1)

(2) Rotate the worm wheel of the drive gear clockwise with the fingers until the loading gear (left) ass'y moves to the position shown in Fig. 2. (Figs. 1 and 2)

(3) Remove two stop washers, then remove the loading gear (left) ass'y. (Fig. 3)

Note: Take care not to deform the arm of the loading gear (left) ass'y.

Precautions for installation

①Align the mark on the loading gear (left) with the center point between two teeth of the loading gear (right), then install the gears on the shaft of the chassis and the shaft of the shuttle (left). (Fig. 4)

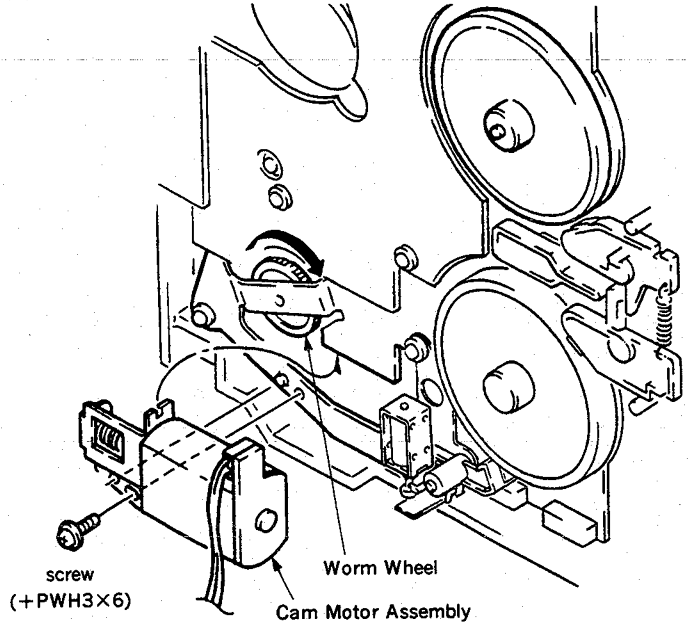

screw
(+PWH3×6)
Worm Wheel
Cam Motor Assembly

Fig. 1

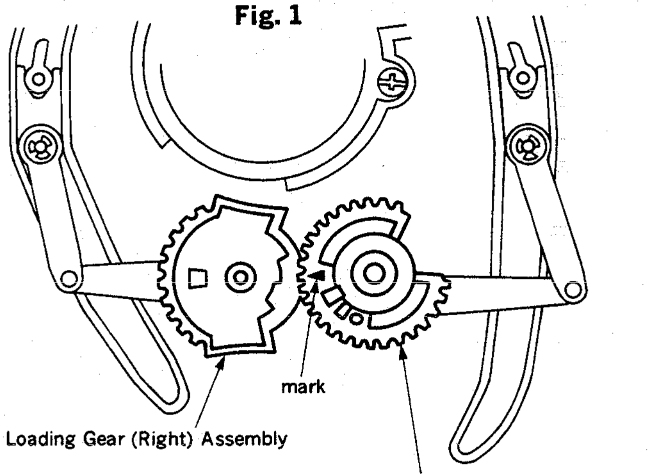

mark
Loading Gear (Right) Assembly
Loading Gear (Left) Assembly

Fig. 2

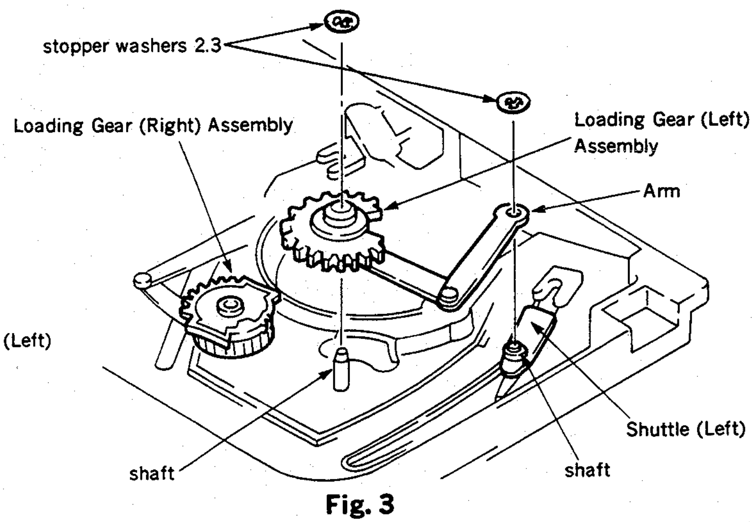

stopper washers 2.3
Loading Gear (Right) Assembly
Loading Gear (Left) Assembly
Arm
shaft
Shuttle (Left)
shaft

Fig. 3

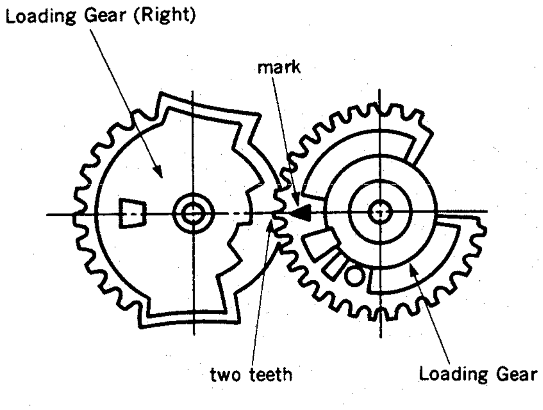

Loading Gear (Right)
mark
two teeth
Loading Gear (Left)

Fig. 4

4-24. SHUTTLE (RIGHT) ASS'Y REPLACEMENT

Tools :

Reference plate (J-6380-080-A)

Master block (J-6380-550-A)

Guide adjustment screwdriver (J-6082-044-A or J-6080-811-A)

Remote controller (SVRM-100, RM-V100, or RM-V200)

(1) Remove the cassette compartment according to sub-section 4-2.

(2) Refer to sub-section 4-23, then move the loading gear (right) ass'y to the position shown in Fig. 1.

(3) Remove the stop washer, then remove the arm of the loading gear (right) ass'y from the shaft of the shuttle plate ass'y. (Fig. 2)

Note : Take care not to deform the arm of the loading gear (right) ass'y.

(4) Remove the screw, then remove the shuttle (right) ass'y and the shuttle plate ass'y. (Fig. 3)

Note : Move the shuttle (right) ass'y in the unthreading end direction to ensure that it does not strike the drum ass'y, then remove it.

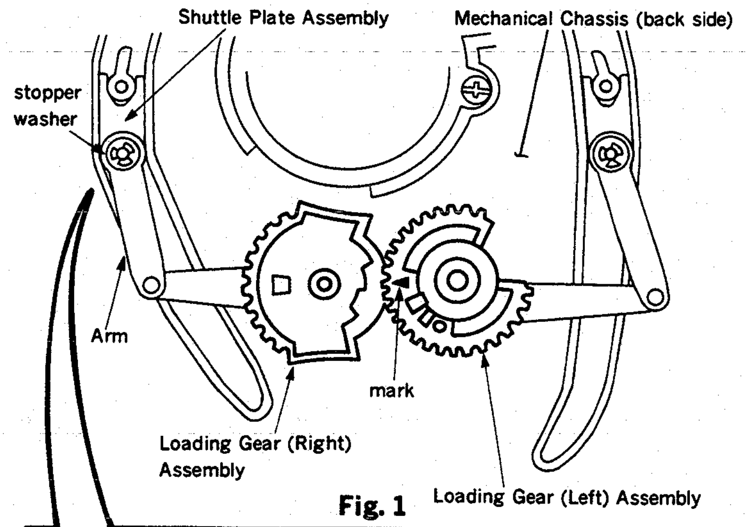

Shuttle Plate Assembly
Mechanical Chassis (back side)
stopper washer
Arm
mark
Loading Gear (Right) Assembly
Loading Gear (Left) Assembly

Fig. 1

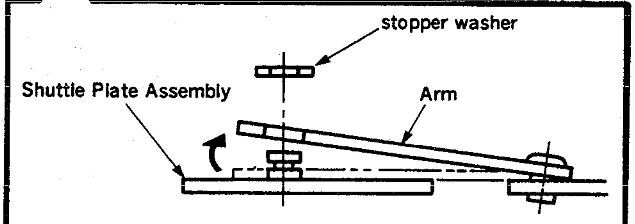

stopper washer
Shuttle Plate Assembly
Arm

Fig. 2

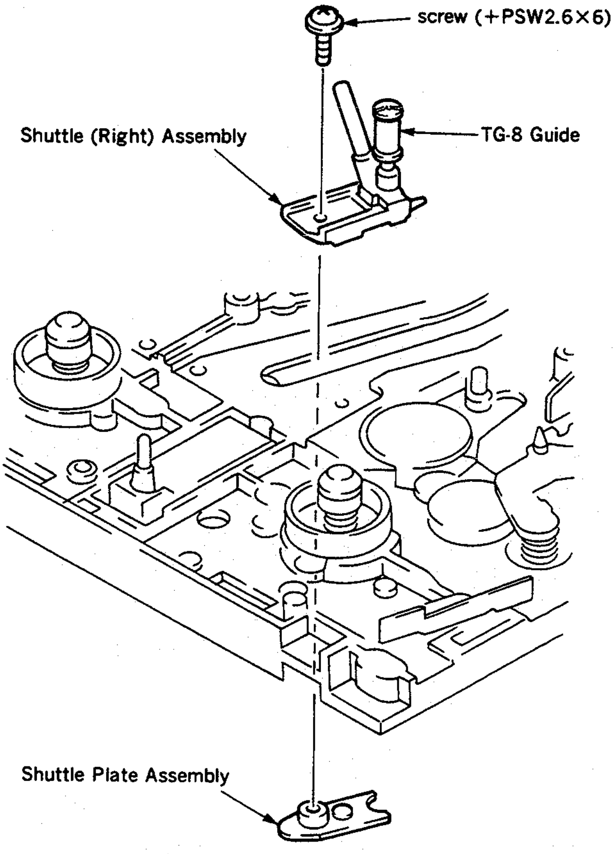

screw (+PSW2.6×6)
Shuttle (Right) Assembly
TG-8 Guide
Shuttle Plate Assembly

Fig. 3

Precautions for installation

①Put the screw as shown in Fig. 4 when installing the shattle (right) ass'y to the shattle plate ass'y.

[Adjustment after replacement]

TG-8 guide height adjustment

(1) Press the PLAY button on the remote controller for the threading completion mode. (See sub-section 4-1-3.)
(2) Clean the mounting face of the reference plate and the four mounting faces on the chassis with cleaning fluid.
(3) Install the reference plate on the chassis. (Fig. 5) (If the reference plate moves about when the top of the plate is touched gently with the fingers at a point near where it is installed on the chassis, turn the adjustment screw until the plate no longer moves about.)
(4) Clean the top of the reference plate and the adjustment face of the master block with cleaning fluid.
(5) Set the master block with the H10 stamped mark upward, then place it against the TG-8 guide from the direction shown in the figure. (Fig. 5)
(6) Using the guide adjustment screwdriver, turn the upper flange on the guide until the specification is satisfied. (Fig. 6)
(7) Perform tape run alignment of section 6.

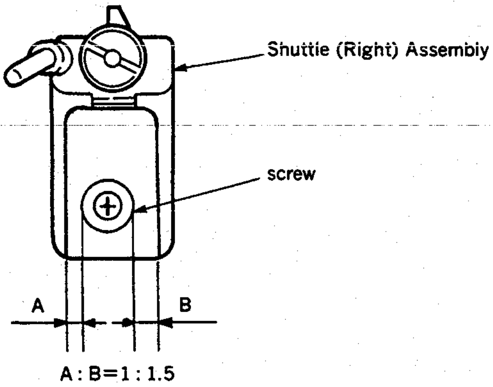

Shuttle (Right) Assembly
screw
A
B
A : B=1 : 1.5

Fig. 4

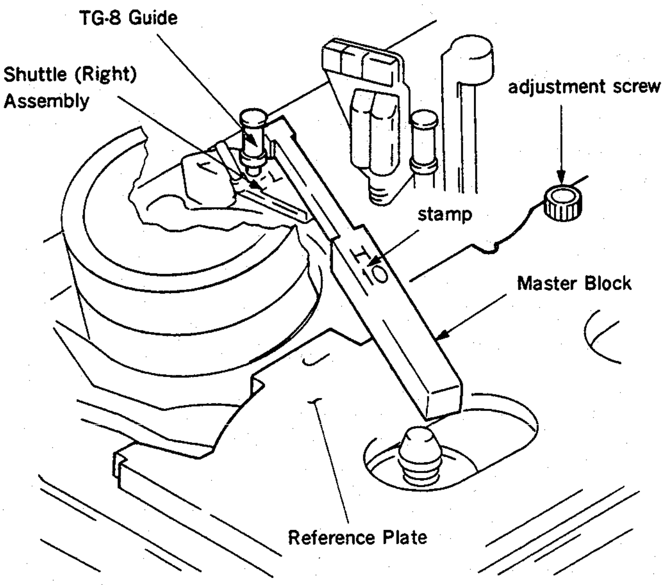

TG-8 Guide
Shuttle (Right) Assembly
adjustment screw
stamp
H10
Master Block
Reference Plate

Fig. 5

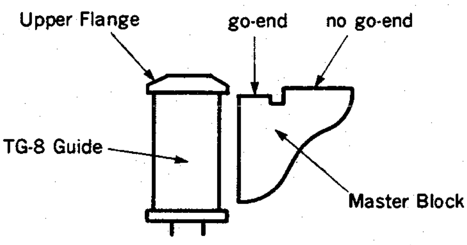

Upper Flange
go-end
no go-end
TG-8 Guide
Master Block

Fig. 6

Spec. :
The height of the upper flange must pass at the go-end of the master block and stop at the no go-end.

4-25. TG-8 GUIDE REPLACEMENT

Tools :

Reference plate (J-6380-080-A)
Master block (J-6380-550-A)
Guide adjustment screwdriver (J-6082-044-A or J-6080-811-A)
Hex wrench screwdriver (width 0.89 mm)
Remote controller (SVRM-100, RM-V100, or RM-V200)

(1) Remove the cassette compartment according to sub-section 4-2.
(2) Loosen the set screw with a hex wrench. (Fig. 1)
(3) Rotate the TG-8 guide counterclockwise with the guide adjustment screwdriver, and remove it. (Fig. 1)

Precautions for installation

①Clean the mounting face of the reference plate and the four mounting faces on the chassis with cleaning fluid.
②Install the reference plate on the chassis. (Fig. 2) (If the reference plate moves about when the top of the plate is touched gently with the fingers at a point near where it is installed on the chassis, turn the adjustment screw until the plate no longer moves about.)
③Clean the top of the reference plate and the adjustment face of the master block with cleaning fluid.
④Set the master block with the H10 stamped mark upward, then place it against the TG-8 guide from the direction shown in the figure, and tighten the set screw until the upper flange is roughly the same height as the go-end of the master block. (Figs. 2 and 3) (Tightening torque of set screw : 78×10^{-3} to 98×10^{-3} N•m (0.8 to 1 kg•cm))

[**Adjustment after replacement**]

(1) Perform TG-8 guide height adjustment according to sub-section 4-24.
(2) Perform tape run alignment of section 6.

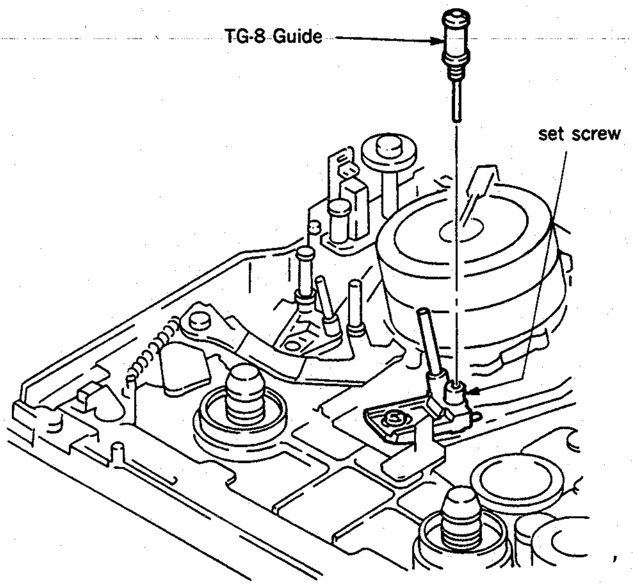


Fig. 1

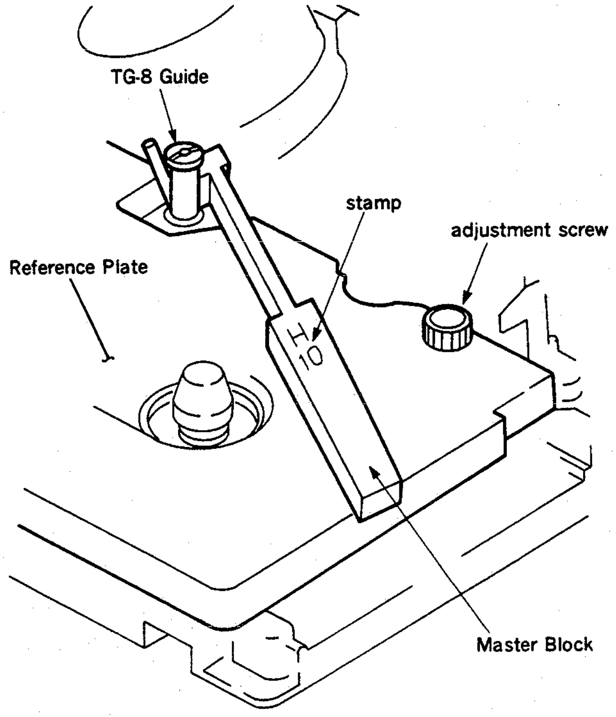


Fig. 2

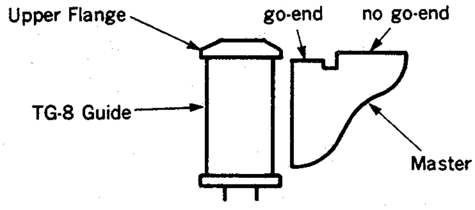


Fig. 3

4-26. SHUTTLE (LEFT) ASS'Y REPLACEMENT

Tools:

Reference plate (J-6380-080-A)
Master block (J-6380-550-A)
Guide adjustment screwdriver (J-6082-044-A or J-6080-811-A)
Remote controller: (SVRM-100, RM-V100, or RM-V200)

(1) Remove the cassette compartment according to sub-section 4-2.

(2) Remove the stop washer, then remove the arm of the loading gear (left) ass'y from the shaft of the shuttle plate ass'y. (Fig. 1)

Note: Take care not to deform the arm of the loading gear (left) ass'y.

(3) Remove the screw, then remove the shuttle (left) ass'y and the shuttle plate ass'y. (Fig. 2)

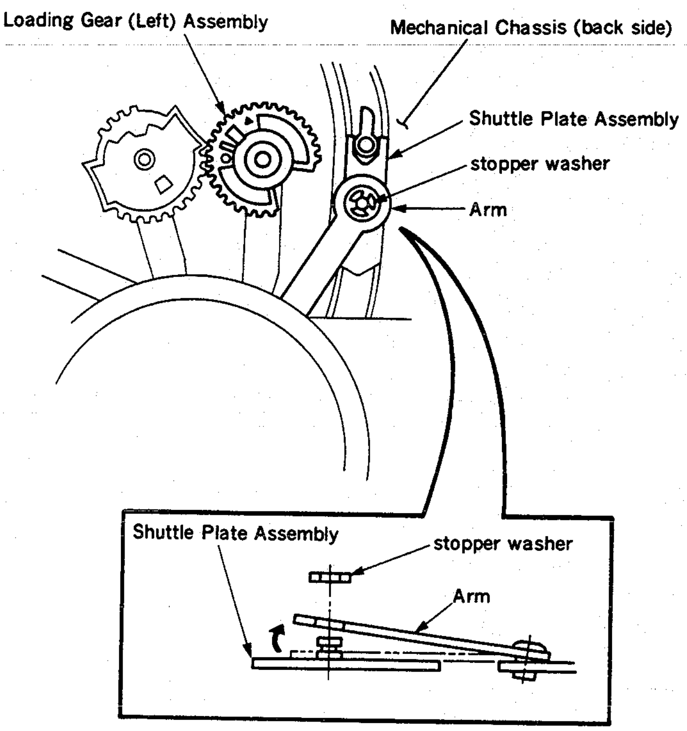

Loading Gear (Left) Assembly
Mechanical Chassis (back side)
Shuttle Plate Assembly
stopper washer
Arm
Shuttle Plate Assembly
stopper washer
Arm

Fig. 1

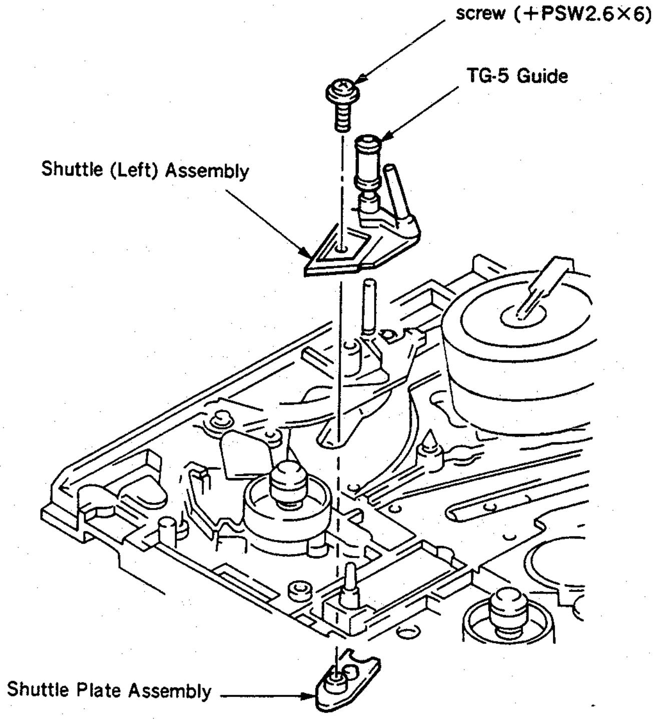

screw (+PSW2.6×6)
TG-5 Guide
Shuttle (Left) Assembly
Shuttle Plate Assembly

Fig. 2

Precaution for installation

①The tension regulator ass'y and shuttle (left) ass'y must be in the position shown in Fig. 3.

②Put the screw as shown in Fig. 4 when installing the shattle (left) ass'y to the shattle plate ass'y.

[**Adjustment after replacement**]

TG-5 guide height adjustment

(1) Press the PLAY button on the remote controller for the threading completion mode. (See sub-section 4-1-3.)

(2) Clean the mounting face of the reference plate and the four mounting faces on the chassis with cleaning fluid.

(3) Install the reference plate on the chassis. (Fig. 5) (If the reference plate moves about when the top of the plate is touched gently with the fingers at a point near where it is installed on the chassis, turn the adjustment screw until the plate no longer moves about.)

(4) Clean the top of the reference plate and the adjustment face of the master block with cleaning fluid.

(5) While moving the stabilizer in the direction of the arrow, set the master block with the H10 stamped mark upward, then place it against the TG-5 guide from the direction shown in the figure. (Fig. 5)

(6) Using the guide adjustment screwdriver, turn the upper flange on the guide until the specification is satisfied. (Fig. 6)

(7) Perform tape run alignment of section 6.

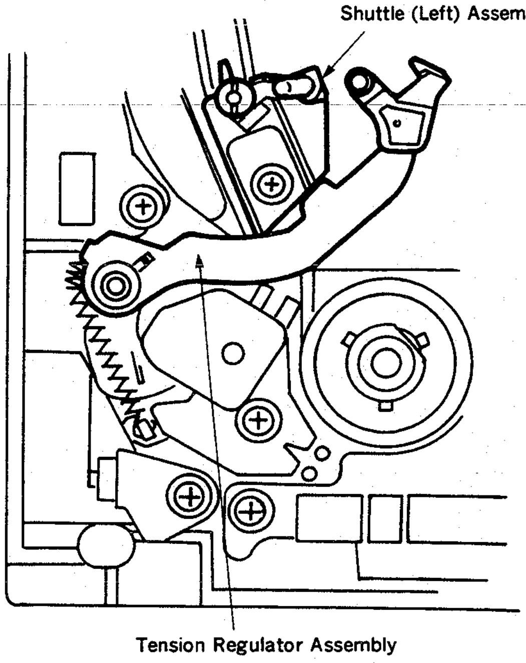

Shuttle (Left) Assembly
Tension Regulator Assembly

Fig. 3

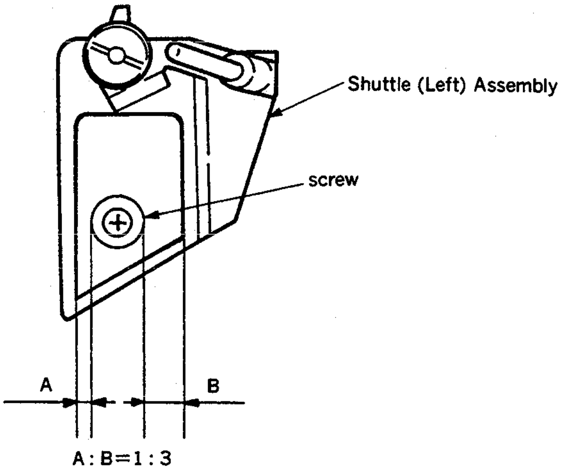

Shuttle (Left) Assembly
screw
A
B
A : B=1 : 3

Fig. 4

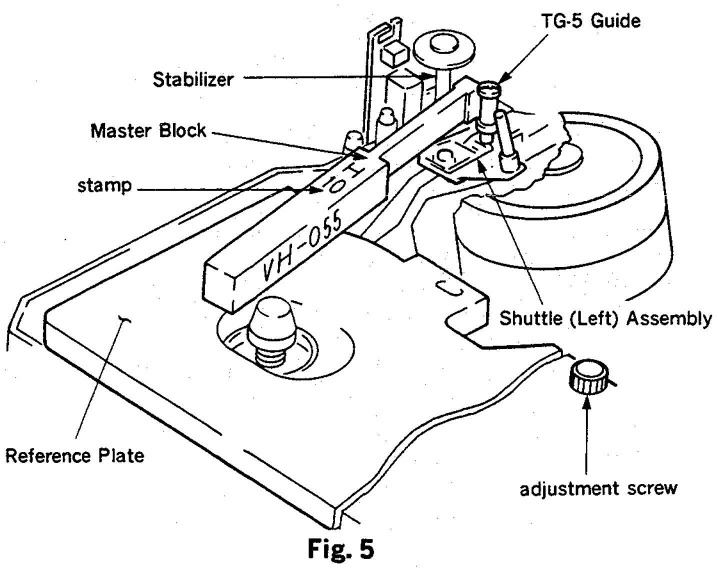

TG-5 Guide
Stabilizer
Master Block
stamp
H10
VH-055
Shuttle (Left) Assembly
Reference Plate
adjustment screw

Fig. 5

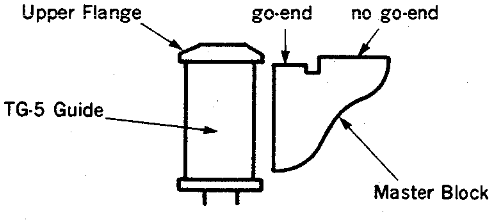

Upper Flange
go-end
no go-end
TG-5 Guide
Master Block

Fig. 6

Spec. :
The height of the upper flange must pass at the go-end of the master block and stop at the no go-end.

4-27. TG-5 GUIDE REPLACEMENT

Tools :

Reference plate (J-6380-080-A)
Master block (J06380-550-A)
Guide adjustment screwdriver (J-6082-044-A or J-6080-811-A)
Hex wrench screwdriver (width 0.89 mm)
Remote controller (SVRM-100, RM-V100, or RM-V200)

(1) Remove the cassette compartment according to sub-section 4-2.
(2) Loosen the set screw with a hex wrench. (Fig. 1)
(3) Rotate the TG-5 guide counterclockwise with the guide adjustment screwdriver, and remove it. (Fig. 1)

Precaution for installation

①Clean the mounting face of the reference plate and the four mounting faces on the chassis with cleaning fluid.

②Install the reference plate on the chassis. (Fig. 2) (If the reference plate moves about when the top of the plate is touched gently with the fingers at a point near where it is installed on the chassis, turn the adjustment screw until the plate no longer moves about.)

③Clean the top of the reference plate and the adjustment face of the master block with cleaning fluid.

④Set the master block with the H10 stamped mark upward, then place it against the TG-5 guide from the direction shown in the figure, and tighten the set screw untile the upper flange is roughly the same height as the go-end of the master block. (Figs. 2 and 3)
(Tightening torque of set screw : 78×10^{-3} to 98×10^{-3} N•m (0.8 to 1 kg•cm))

[**Adjustment after replacement**]

(1) Perform TG-5 guide height adjustment according to sub-section 4-26.
(2) Perform tape run alignment of section 6.

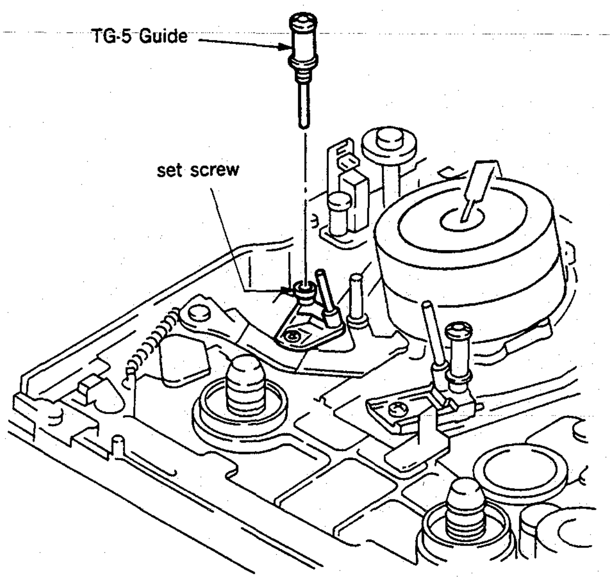


Fig. 1

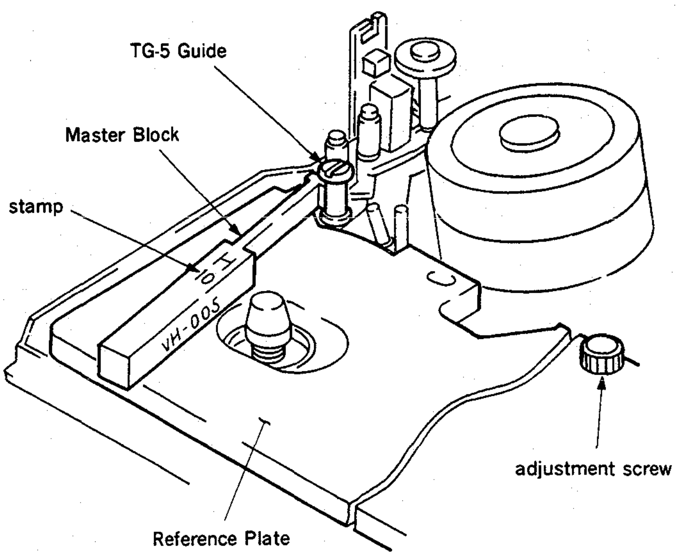


Fig. 2

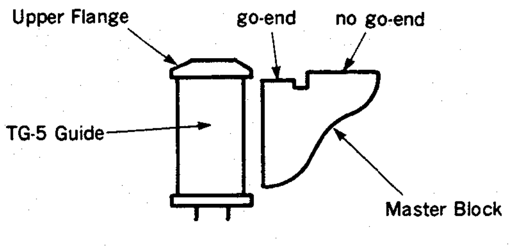


Fig. 3

4-28. SLIDE RAIL (R) REPLACEMENT

(1) Remove the cassette compartment according to sub-section 4-2.

(2) Remove the BC roller ass'y according to sub-section 4-3.

(3) Remove the shuttle (right) ass'y according to sub-section 4-24.

(4) Remove the screw, then remove the LE-80 board. (Fig. 1)

(5) Remove two screws, then remove the shuttle holder in the direction of arrow A. (Fig. 1)

(6) Remove claws **a**, **b** and **c** and also the two parts with the square hole on slide rail (R) from the chassis, then remove the slide rail (R). (Fig. 1)

Precautions for installation

①While moving the stabilizer in the direction of arrow B, fit claw **a** into the chassis, then insert projection **a** into the hole in the chassis. (Fig. 1)

②Next, align projections **b** and **c** with the holes in the chassis, then insert claws **b** and **c** and also the two parts with the square holes into the chassis. (Figs. 2 and 3)

[Adjustment after replacement]

(1) Perform tape run alignment of section 6.

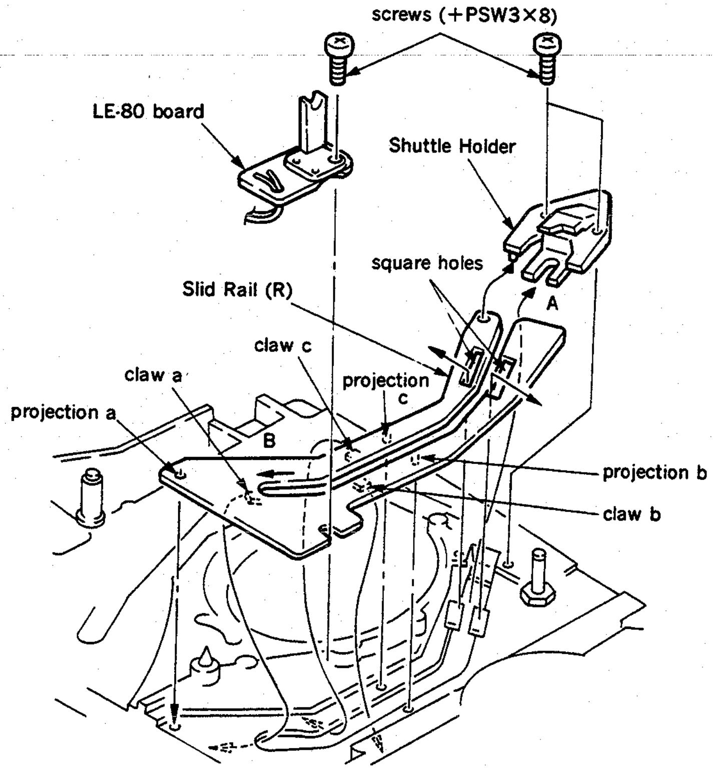

screws (+PSW3×8)
LE-80 board
Shuttle Holder
square holes
A
Slid Rail (R)
claw c
claw a
projection c
projection a
B
projection b
claw b

Fig. 1

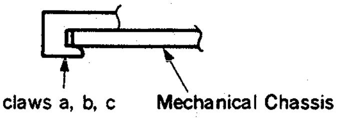

claws a, b, c
Mechanical Chassis

Fig. 2

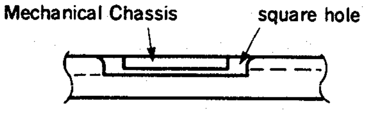

Mechanical Chassis
square hole

Fig. 3

4-29. SLIDE RAIL (L) REPLACEMENT

(1) Remove the cassette compartment according to sub-section 4-2.

(2) Remove the tension regulator ass'y and the STD ass'y according to sub-section 4-7.

(3) Remove the tape stabilizer ass'y according to sub-section 4-9.

(4) Remove the shuttle (left) ass'y according to sub-section 4-26.

(5) Remove two screws, then remove the shuttle holder in the direction of arrow A. (Fig. 1)

(6) Remove three claws **a**, **b** and **c** and two parts with the square hole on slide rail (L) from the chassis, then remove the slide rail (L). (Fig. 1)

Precautions for installation

①While moving the slide rail in the direction of arrow B, fit claw **a** into the chassis, then insert projection **a** into the hole in the chassis. (Fig. 1)

②Next, align projections **b** and **c** with the holes in the chassis, then insert claws **b** and **c** and also the two parts with the square hole into the chassis. (Figs. 2 and 3)

[**Adjustment after replacement**]

(1) Adjust the height of the TG-3 guide once again according to sub-section 4-9.

(2) Adjust the position of the tension regulator once again according to sub-section 4-7.

(3) Adjust the tape tension once again according to sub-section 5-2.

(4) Perform tape run alignment of section 6.

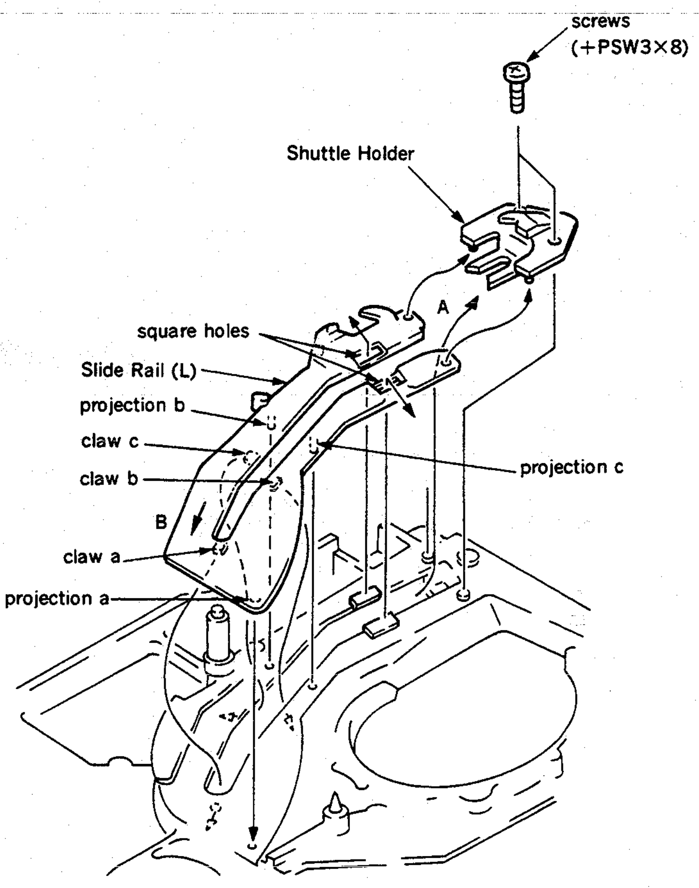

screws
(+PSW3×8)
Shuttle Holder
A
square holes
Slide Rail (L)
projection b
claw c
claw b
B
claw a
projection a
projection c

Fig. 1

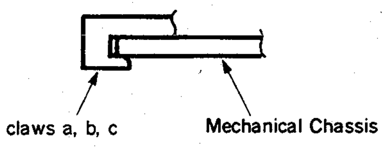

claws a, b, c
Mechanical Chassis

Fig. 2

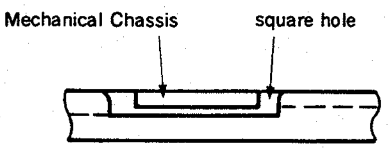

Mechanical Chassis
square hole

Fig. 3

4-30. CAPSTAN MOTOR REPLACEMENT

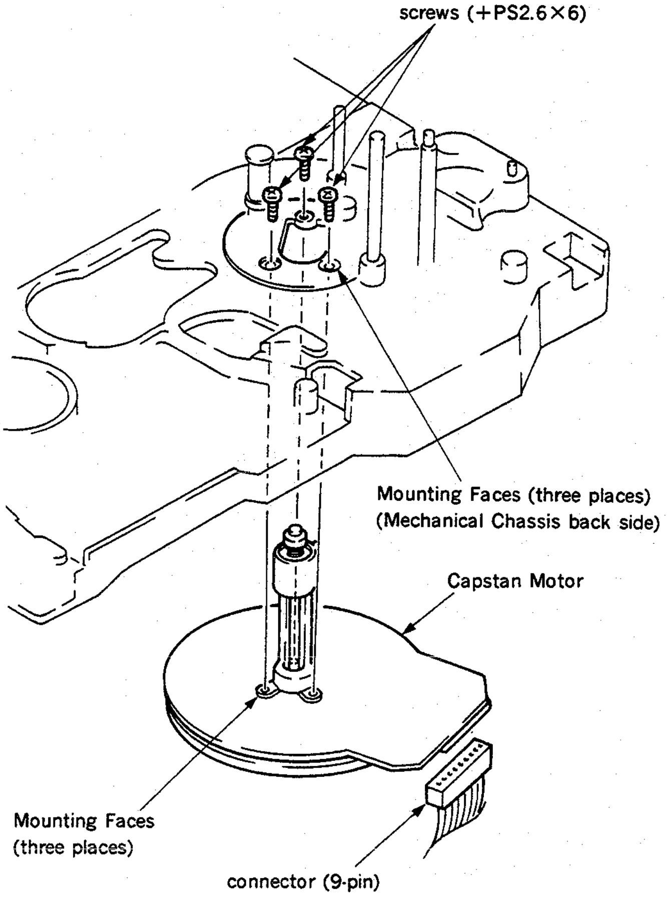
(1) Remove the drive gear ass'y according to subsection 4-20.
(2) Disconnect the 9-pin connector from the capstan motor board.
(3) Remove three screws, then remove the capstan motor.

Precaution for installation

①Clean the three mounting faces at the back of the chassis and the three mounting faces of the capstan motor with cleaning fluid.
②Take care not to damage the capstan shaft.

[**Adjustment after replacement**]

(1) Perform tape run alignment of section 6.
(2) Perform servo system alignment as follows:
  - 8-3. Capstan FG (B) Duty Ratio Adjustment
  - 8-4. Capstan FG (A) Duty Ratio Adjustment
  - 8-5. Capstan Stop Servo Error Adjustment


screws (+PS2.6×6)
Mounting Faces (three places)
(Mechanical Chassis back side)
Capstan Motor
Mounting Faces
(three places)
connector (9-pin)

4-31. PINCH SOLENOID ASS'Y REPLACEMENT

(1) Disconnect connector CN118 from the SS board, then remove the harness from the wiring clamp. (Fig. 1)
(2) Pull out the pinch roller block ass'y using the procedure in sub-section 4-12.
(3) Remove the screw, then remove the retainer and the poly-slider-washer. (Fig. 2)
(4) Remove two screws, then raise the pinch solenoid ass'y and remove it. (Fig. 2)

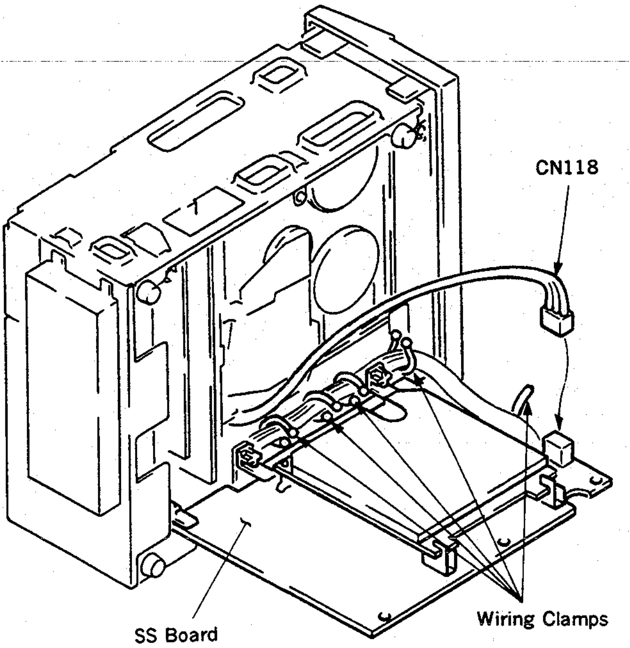

CN118
SS Board
Wiring Clamps

Fig. 1

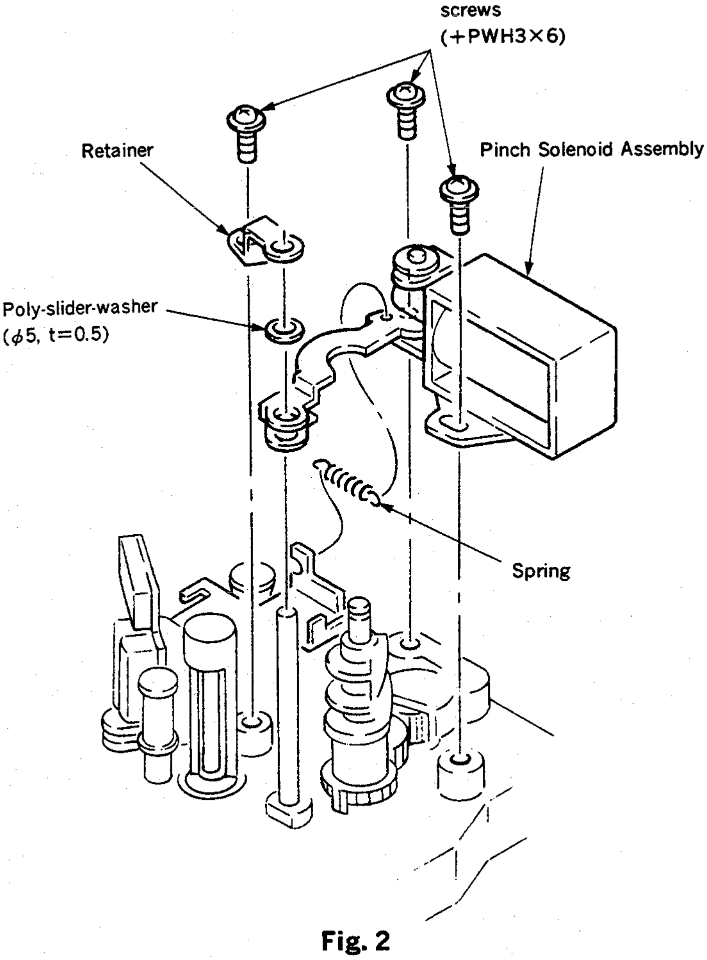

screws
(+PWH3×6)
Retainer
Pinch Solenoid Assembly
Poly-slider-washer
(ϕ5, t=0.5)
Spring

Fig. 2

(5) Remove two screws, then remove the solenoid from the solenoid base. (Fig. 3)

(6) Remove the stopper washer, then remove the solenoid pin and the pressure lever from the iron core. (Fig. 3)

Precautions for installation

①Align the longitudinal hole of the pinch solenoid ass'y with the boss of the mechanical chassis, then screw in the fixing screws but do not tighten them hard. (Fig. 4)

②Insert a flat blade screwdriver at the point indicated by A in the drawing, then turn it clockwise so that the pinch solenoid ass'y moves in the direction of the arrow as far as it will go, and tighten the two screws hard. (Fig. 4)

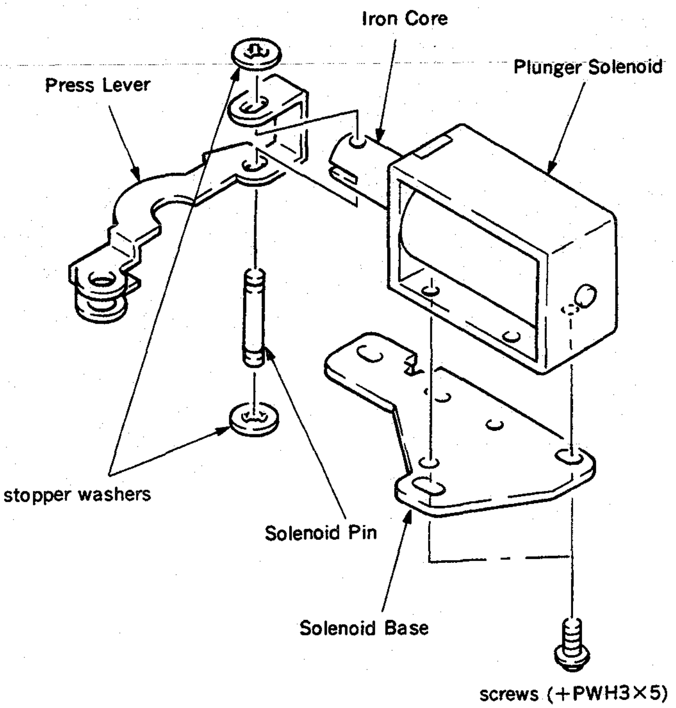

Iron Core
Plunger Solenoid
Press Lever
stopper washers
Solenoid Pin
Solenoid Base
screws (+PWH3×5)

Fig. 3

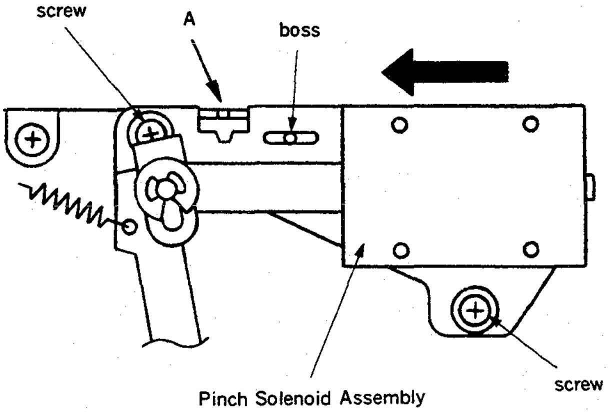

screw
A
boss
Pinch Solenoid Assembly
screw

Fig. 4

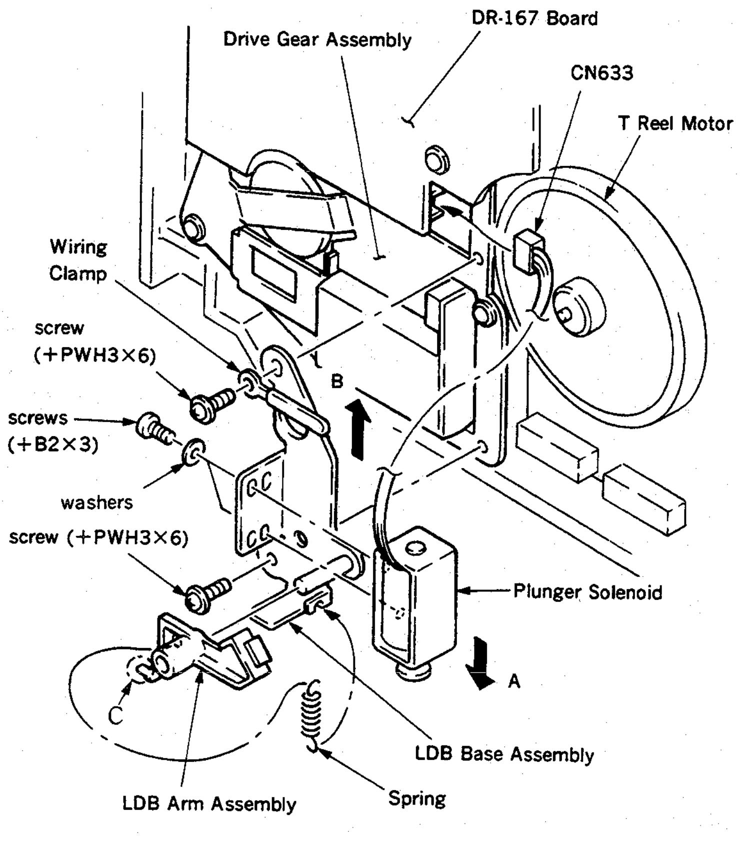
4-32. LDB BRAKE ASS'Y REPLACEMENT

Tool :
MOLYKOTE grease EM-30LG (J-6090-014-A)
or MOLYKOTE grease EM-30L : DOW CORNING Corp.

(1) Disconnect connector CN633 from the DR-167 board.
(2) Remove two screws and the wiring clamp, then remove the LDB brake ass'y.
(3) Remove two screws and the two washers, then remove the plunger solenoid from the LDB base ass'y.
(4) Remove the spring, then pull out the LDB arm ass'y from the LDB base ass'y.

Precautions for installation

①When installing the plunger solenoid on the LDB base ass'y first temporarily install it with the two screws and two washers, then move it fully in the direction of arrow A and tighten the screws hard.
②When installing the LDB brake ass'y on the drive gear ass'y, temporarily install it with the two screws and the wiring clamp, then move it fvlly in the direction of arrow B and tighten the screws hard.
③Fix the harness of the plunger solenoid with the wiring clamp in such a way that it does not touch the T reel motor.
④Apply a dab of MOLYKOTE grease to part C shown in the drawing after replacing the LDB arm ass'y with a new one.


DR-167 Board
Drive Gear Assembly
CN633
T Reel Motor
Wiring Clamp
screw (+PWH3×6)
B
screws (+B2×3)
washers
screw (+PWH3×6)
Plunger Solenoid
A
C
LDB Base Assembly
LDB Arm Assembly
Spring
LDB Brake Assembly

4-33. PINCH COMMUNICATION GEAR REPLACEMENT

Tools :
RG reference pin (1) (J-6380-040-A)
RG reference pin (2) (J-6380-050-A)

(1) Remove the LDB brake ass'y from the drive gear ass'y using the procedure in sub-section 4-32.
(2) Remove two screws (a), then disconnect two connectors CN638 and CN639 from the DR-167 board, and remove the DR-176 board.
(3) Disconnect connector CN604 from the drum ass'y.
(4) Disconnect connector CN620 from the LD-35 board.
(5) Remove four screws (b), then remove the DR-176 board.
(6) Remove three screws (c), then remove the drive gear ass'y.
Take care not to rotate the mode gear (2) more than one revolution after removing the drive gear ass'y.
(7) Remove the stop washer, then remove the pinch communication gear. (Fig. 2)

Precautions after installation of pinch communication gear

①Pass RG reference pin (1) and RG reference pin (2) through the holes shown in the drawing of the drive gear ass'y, then align the pins with the holes in the mode gear (2) and pinch communication gear, respectively, and install the drive gear ass'y. (By aligning the pins with the holes in the gears, the meshing phases of the drive gear system will coincide.)

② For aligning the meshing phases of the press cam gear with the pinch communication gear, remove the press cam gear using the procedure in sub-section 4-13, and reinstall it.

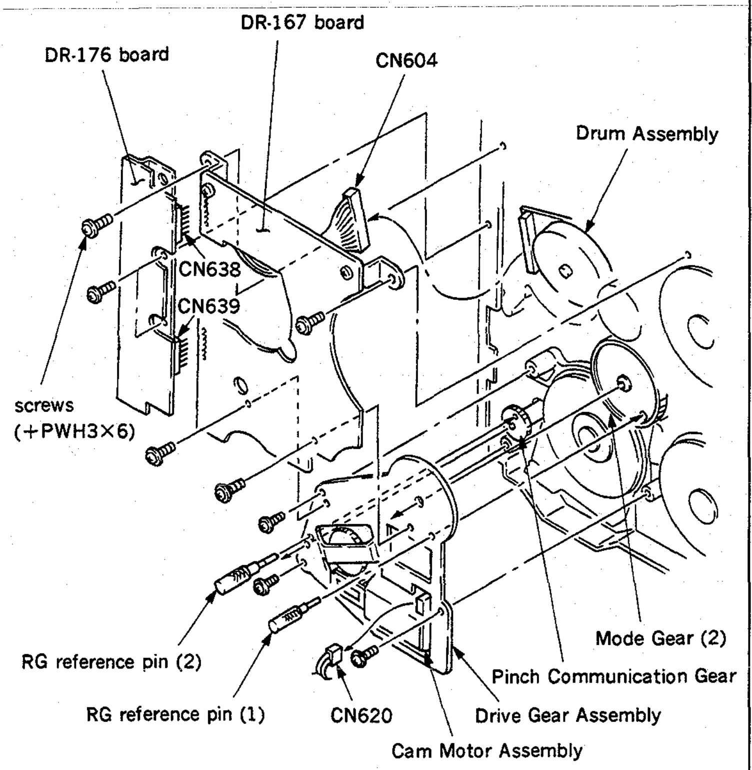

DR-167 board
DR-176 board
CN604
Drum Assembly
CN638
CN639
screws
(+PWH3X6)
Mode Gear (2)
RG reference pin (2)
Pinch Communication Gear
RG reference pin (1)
CN620
Drive Gear Assembly
Cam Motor Assembly

Fig. 1

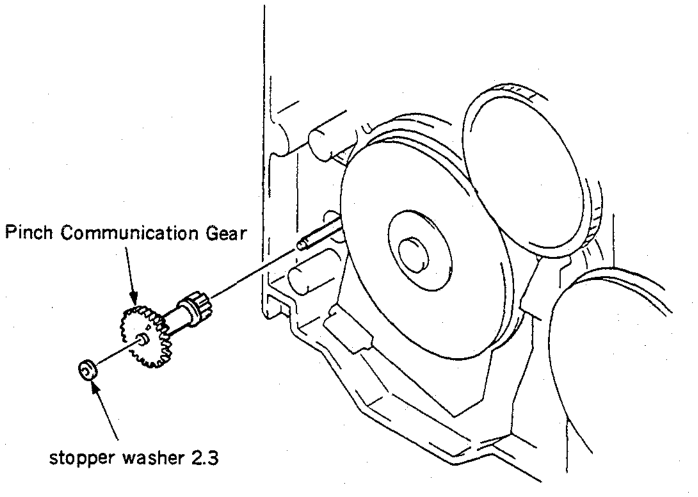

Pinch Communication Gear
stopper washer 2.3

Fig. 2

SECTION 5
TORQUE AND TAPE TENSION ALIGNMENT

5-1. S/T REEL TABLE TORQUE ADJUSTMENT

Tools :

Torque gauge (H-7099-039-H)
Torque gauge adapter (H-7099-035-H)
Shorting clip

Adjustment Procedure :

(1) Remove the cassette compartment according to sub-section 2-2.
(2) Set No.1 and No.8 switches of DIP switch S101/SS board (H-9/J-9) to ON. (Fig. 1)
(3) Short TP304 (D-9) and E5 (C-9) on the SS board with a shorting clip. (Fig. 1)
(4) Press the cassette down switch with the finger, and while keeping it depressed, turn the POWER switch ON. (Fig. 2)

S side reel table adjustment

(5) Install the torque meter at the S side reel table. (Fig. 3)
(6) Put the VTR in the PLAY mode.
(7) Adjust RV303/SS board (C-9) so that the value on the torque meter meet the required specification.
(8) Put the VTR in the STOP mode.

T side reel table adjustment

(9) Install the torque meter at the T side reel table. (Fig. 3)
(10) Put the VTR in PLAY mode.
(11) Adjust RV304/SS board (C-9) so that the value on the torque meter meet the required specification.
(12) Upon completion of adjustments, remove the shorting clip.
(13) Set No.1 and No.8 switches of S101 to OFF.

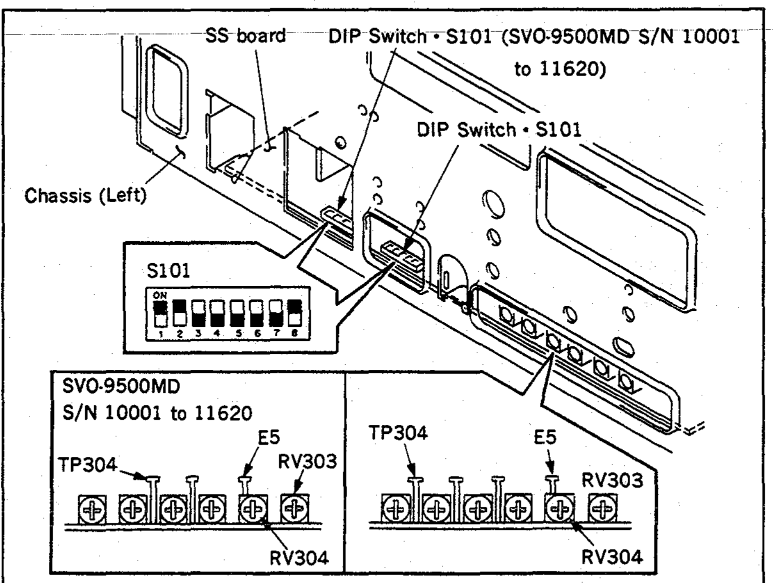

SS board
DIP Switch • S101 (SVO-9500MD S/N 10001 to 11620)
DIP Switch • S101
Chassis (Left)
S101
ON
1 2 3 4 5 6 7 8
SVO-9500MD
S/N 10001 to 11620
E5
RV303
TP304
RV304
TP304
E5
RV303
RV304

Fig. 1

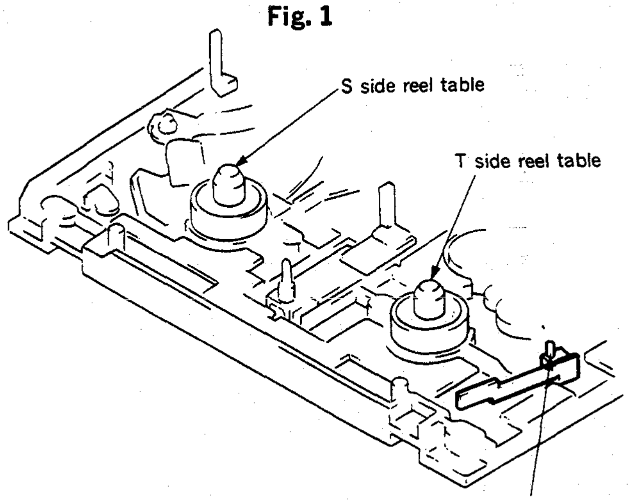

S side reel table
T side reel table
Cassette Down Switch

Fig. 2

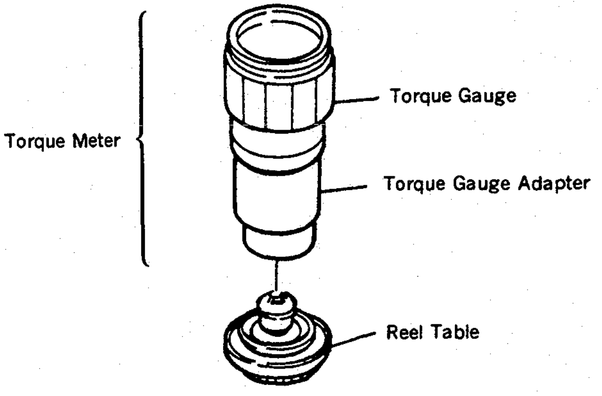

Torque Meter
Torque Gauge
Torque Gauge Adapter
Reel Table

Fig. 3

Spec. :
S/T Side $(147\pm5)\times10^{-4}$ N•m (150±5 g•cm)

5-2. TAPE TENSION ADJUSTMENT

Be sure to perform this adjustment after replacing a part of the tape run system, such as the drum or tension regulator. Also, be sure to check the tape tension when performing a periodic check.

Tools :
Tentelometer (T2-H7-UMC)
S-VHS cassette tape (T-120)

Adjustment Procedure :

(1) To prevent the tape from touching the tentelometer, rotate the tape stabilizer in the direction of the arrow until it strikes the chassis (left), then insert the bamboo skewer, or the like, at point "a" shown in the figure, and fix it in place. (Fig. 2)

(2) Insert a cassette tape (T-120) in the VTR, then put the VTR into the PLAY mode.

(3) Install the tentelometer between the TG-3 guide and the TG-5 guide. (Fig. 2)

(4) Adjust RV301/SS board (D-9) so that the value on the tentelometer meet the required specification 1.

(5) Enter the SEARCH REV mode.

(6) Adjust RV302/SS board (C-9) so that the value on the tentelometer meet the required specification 2.

(7) Enter the PAUSE mode.

(8) Adjust RV305/SS board (D-9) so that the value on the tentelometer meet the required specification 3.

(9) Confirm that each of the tape tensions meet the required specification 1 and 3.
During PLAY mode, tape tension required as Spec. 1, and PAUSE mode, tape tension required as Spec. 3.

(10) Confirm that each of the tape tensions meet the required specification 2 and 3.
During SEARCH REV mode, tape tension required as Spec. 2, and PAUSE mode, tape tension required as Spec. 3.

(11) Remove the tentelometer and bamboo skewer, then press the EJECT button and remove the cassette tape.

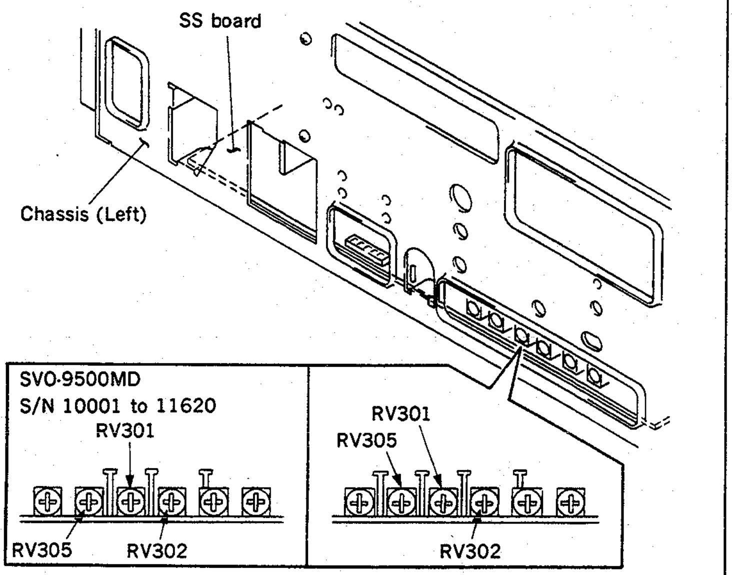


Fig. 1

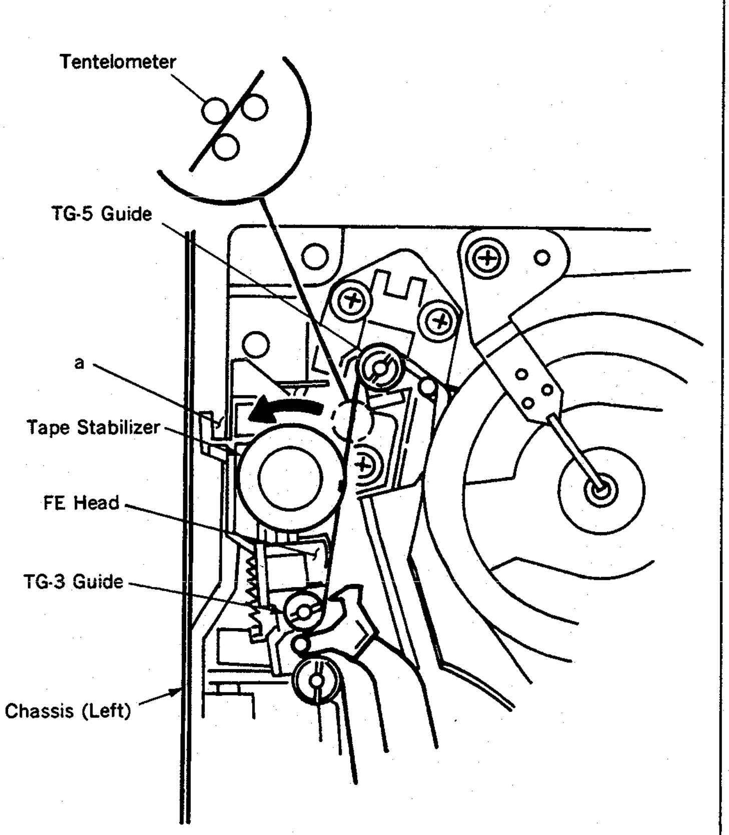


Fig. 2

Spec. 1 : Tape tension in the PLAY mode
$[245 \pm 25] \times 10^{-3}$ N (25.0 ± 2.5 g)

Spec. 2 : Tape tension in the SEARCH REV mode
$[392 \pm 25] \times 10^{-3}$ N (40.0 ± 2.5 g)

Spec. 3 : Tape tension in the PAUSE mode
$[216 \pm 20] \times 10^{-3}$ N (22 ± 2 g)

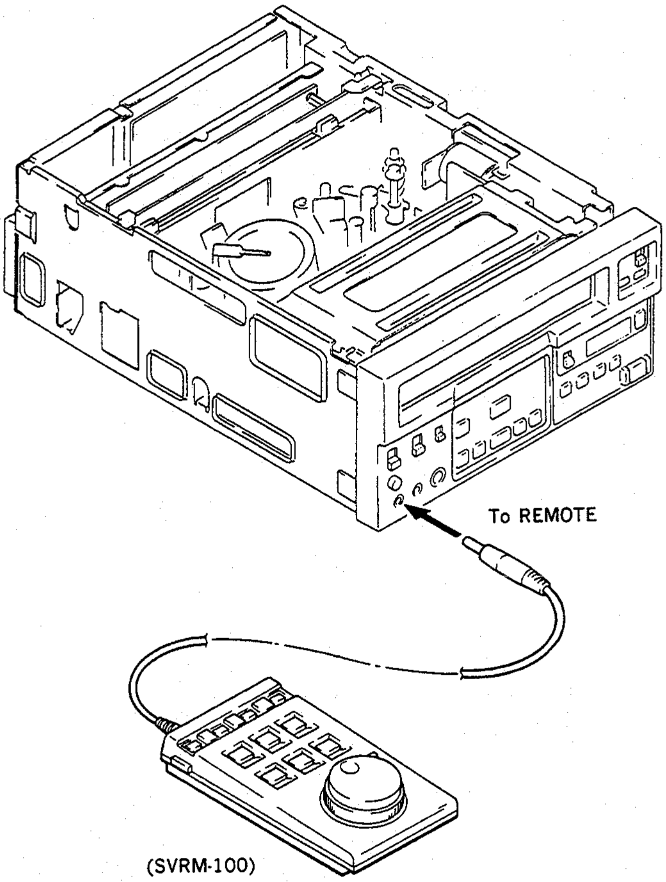
SECTION 6
TAPE RUN ALIGNMENT

The tape run system has been adjusted before leaving the factory. If a part in the transport is replaced, therefore, the new part should be adjusted carefully to ensure that the tape transport is stable.
This section covers the entire adjustment procedure from coarse adjustment to fine adjustment.
Before commencing adjustment, remove the top panel and the U case of the VTR.

[**Adjustment preparations**]

1) **Remote controller**
   Obtain remote controller RM-V100, RM-V200, or SVRM-100 to operate the VTR.
   (When remote controller is not available, use function buttons of VTR.)

Connecting the remote controller

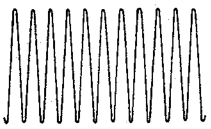
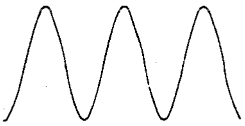


SVRM-100, RM-V100, or RM-V200

2) Equipment and tool

- Oscilloscope
- Tentelometer, T2-H7-UMC
- Guide adjustment screwdriver (J-6082-044-A or J-6080-811-A)
- Small adjustment mirror (J-6080-840-A)
- X value adjustment tool (J-6380-710-A)
- X value adjustment tool connecting cable (See sub-section 6-9) (Must be provided by the service side.)
- RP extension tool (J-6381-370-A)
- S-VHS cassette tapes, T-160 and T-120
- Alignment tape, JVC-MH-1 (H-7099-046-H)
- Alignment tape, KRV-5821NSA (8-192-602-43)
- Alignment tape, KRV-45HNS (Pending) or KRV-51HN (8-192-605-21)

Signals recorded on the alignment tape

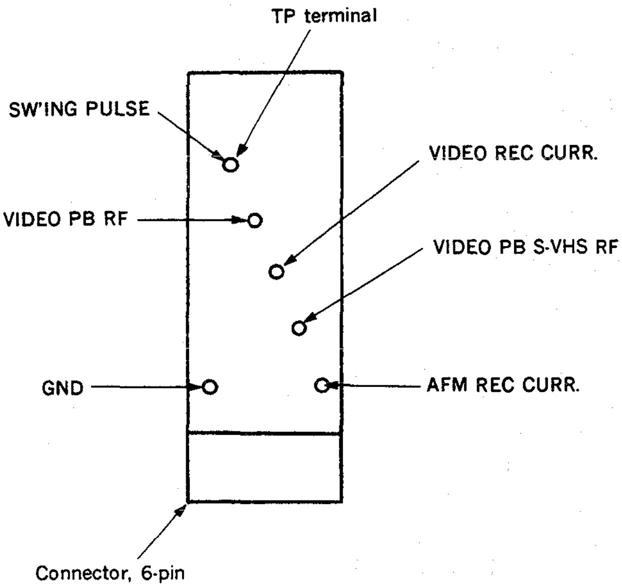
Name (Part No.)	Recording mode	Signals recorded on the tape	
		Video area	Audio area
JVC-MH-1 (H-7099-046-H)	SP	• Stairstep 10 min • No signal 5 min • Color bars 10 min • RF sweep 3 min Markers: 2.0 MHz 4.0 MHz 5.0 MHz	• 7 kHz 10 min • 3 kHz 5 min • 1 kHz (0 dB) 10 min • No signal 3 min
KRV-5821NSA (8-192-602-43)	SP	• 1 MHz (CH-1 only) } 120 min • 1 V blanking every 60 V } 120 min	• 7 kHz 120 min } MIX • 1 kHz 120 min } MIX 7 kHz  1 kHz 
KRV-45HNS (S-VHS) (Pending)	SP	• Color bars 170 min	• Normal audio 170 min 7 kHz 15 s, 400 Hz 15 s (alternatery) • Hi-Fi audio 170 min 400 Hz (stereo)
KRV-51HN (S-VHS) (8-192-605-21)	SP	• Color bars 5 min	• No signal
	EP	• Color bars 5 min	• No signal

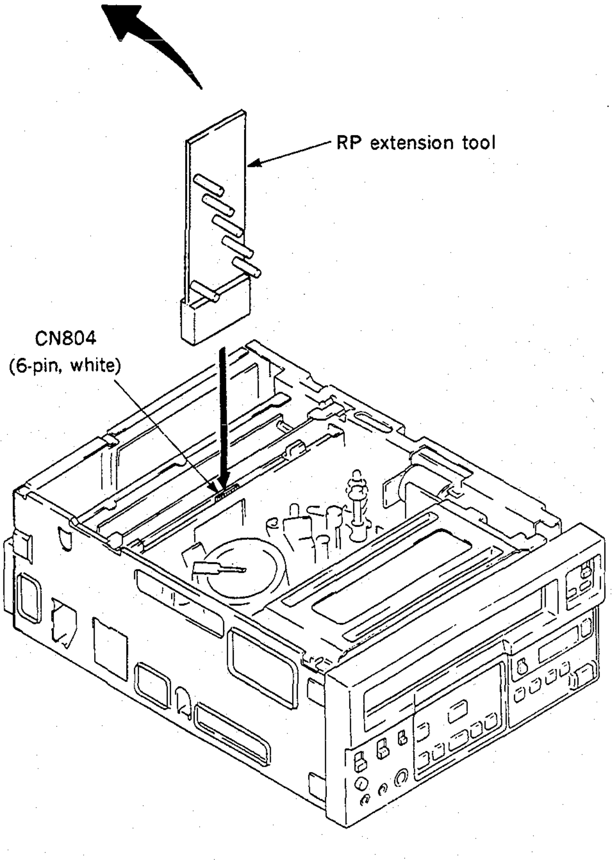
RP extension tool

This extension tool is used to take off the signal output from the check connector CN804 on the RP board so as to enable it to be connected easily to a probe.
It is intended to be inserted into connector CN804.

CN804 output signal

Pin No.	Output Signal
1	AFM REC CURRENT
2	S-VHS • VIDEO PB RF OUT
3	VIDEO REC CURRENT
4	VHS • VIDEO PB RF OUT
5	RF SWITCHING PULSE
6	GND


TP terminal
SW'ING PULSE
VIDEO REC CURR.
VIDEO PB RF
VIDEO PB S-VHS RF
GND
AFM REC CURR.
Connector, 6-pin


RP extension tool
CN804
(6-pin, white)

X value adjustment tool

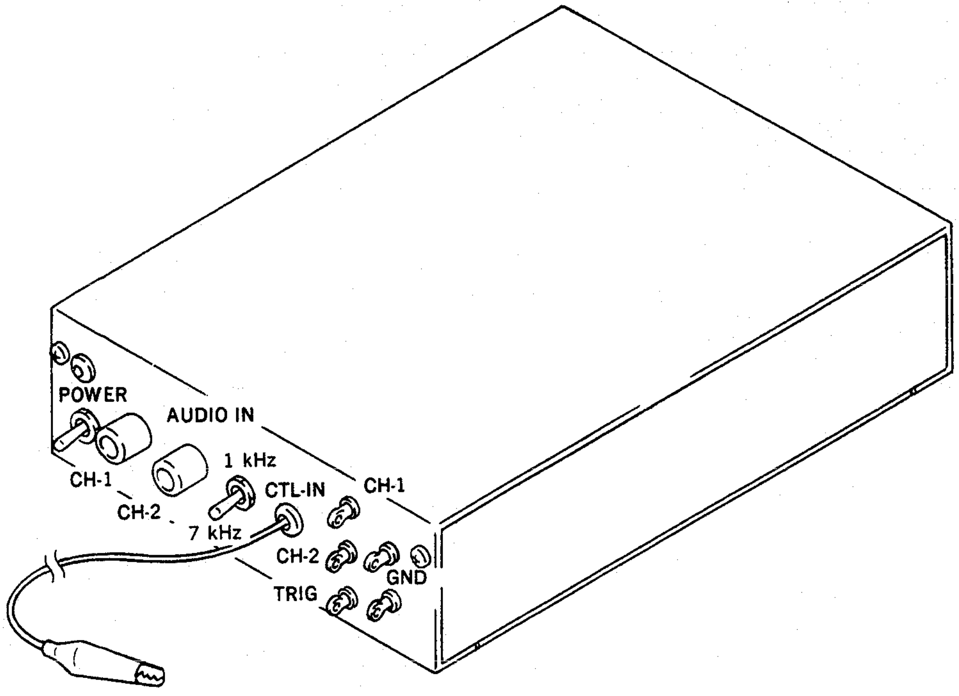
This tool is used when adjusting the height of the audio head, the azimuth, zenith, head-to-tape contact and the X value (position of audio head).

Power is supplied from two internal dry batteries (9 V).

When replacing the dry batteries, remove four screws at the bottom, and open the bottom plate of the tool.

Note:

The batteries will run down quickly if the POWER switch of the tool is left switched ON.

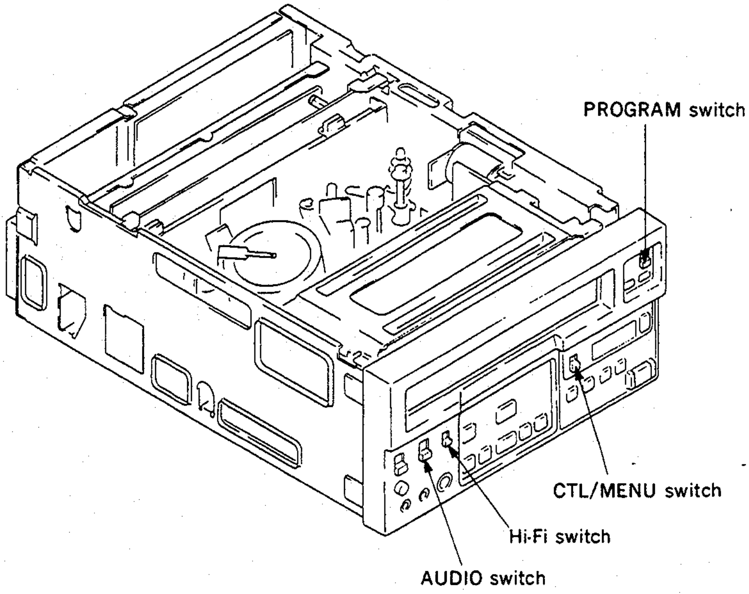

POWER
AUDIO IN
CH-1
CH-2
1 kHz
7 kHz
CTL-IN
CH-1
CH-2
GND
TRIG

X value adjustment tool

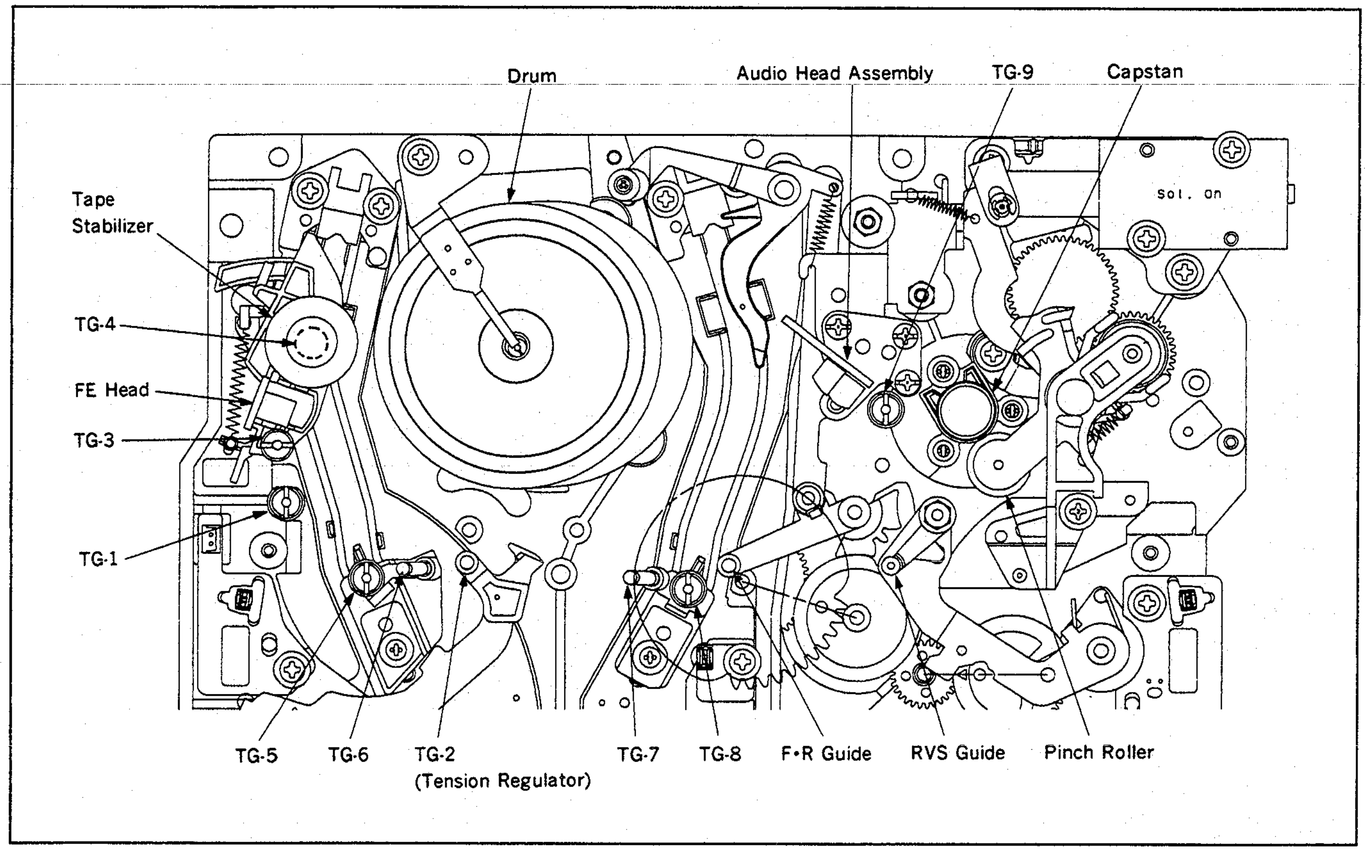
3) Switch setting

Set the switches of the frontpanel as follow.

Select Switch	Setting Position
PROGRAM	OFF
CTL/MENU	CTL
Hi-Fi	OFF
AUDIO	NORM

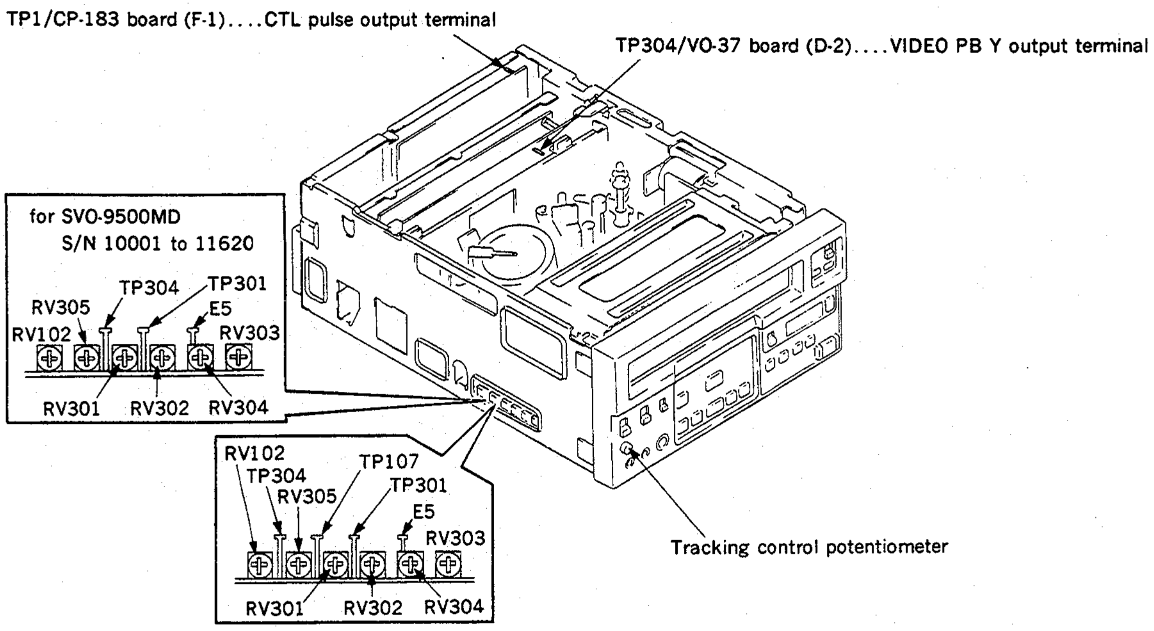

PROGRAM switch
CTL/MENU switch
Hi-Fi switch
AUDIO switch

[Tape guide layout drawing]


Drum
Audio Head Assembly
TG-9
Capstan
Tape Stabilizer
TG-4
FE Head
TG-3
TG-1
sol. on
TG-5
TG-6
TG-2
(Tension Regulator)
TG-7
TG-8
F•R Guide
RVS Guide
Pinch Roller

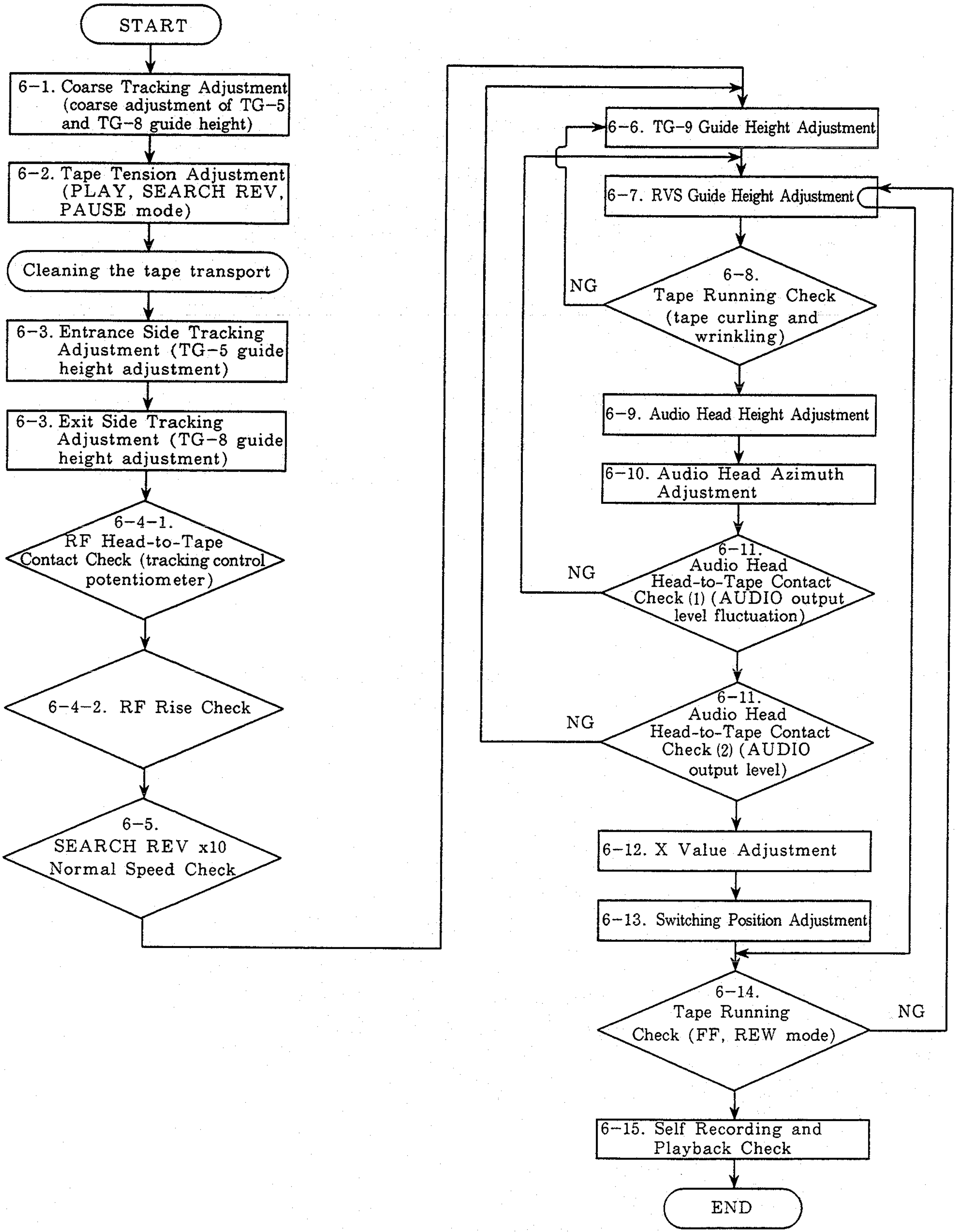
[Position of potentiometers and TP terminals]

The positions of the adjustment potentiometers and TP terminals are shown in the figure below.
(The figure below shows the VTR with the top panel and U case removed.)


TP1/CP-183 board (F-1)....CTL pulse output terminal
TP304/VO-37 board (D-2)....VIDEO PB Y output terminal
for SVO-9500MD
S/N 10001 to 11620
TP304
TP301
RV305
E5
RV102
RV303
RV301
RV302
RV304
RV102
TP107
TP304
RV305
TP301
E5
RV303
RV301
RV302
RV304
Tracking control potentiometer

- RV301....PLAY mode tape tension adjustment potentiometer
- RV302....Search REV mode tape tension adjustment potentiometer
- RV305....PAUSE mode tape tension adjustment potentiometer
- RV102....Switching position adjustment potentimeter

[Adjustment Flow Chart]


START
6−1. Coarse Tracking Adjustment (coarse adjustment of TG−5 and TG−8 guide height)
6−2. Tape Tension Adjustment (PLAY, SEARCH REV, PAUSE mode)
Cleaning the tape transport
6−3. Entrance Side Tracking Adjustment (TG−5 guide height adjustment)
6−3. Exit Side Tracking Adjustment (TG−8 guide height adjustment)
6−4−1. RF Head-to-Tape Contact Check (tracking control potentiometer)
6−4−2. RF Rise Check
6−5. SEARCH REV x10 Normal Speed Check
6−6. TG−9 Guide Height Adjustment
6−7. RVS Guide Height Adjustment
NG
6−8. Tape Running Check (tape curling and wrinkling)
6−9. Audio Head Height Adjustment
6−10. Audio Head Azimuth Adjustment
NG
6−11. Audio Head Head-to-Tape Contact Check (1) (AUDIO output level fluctuation)
NG
6−11. Audio Head Head-to-Tape Contact Check (2) (AUDIO output level)
6−12. X Value Adjustment
6−13. Switching Position Adjustment
6−14. Tape Running Check (FF, REW mode)
NG
6−15. Self Recording and Playback Check
END

6-1. COARSE TRACKING ADJUSTMENT

Tools :
Oscilloscope
RP extension tool (J-6381-370-A)
Alignment tape (KRV-5821NSA)
Guide adjustment screwdriver (J-6082-044-A or J-6080-811-A)

Adjustment Procedure :

(1) Connect the oscilloscope as follows.
  CH-1 : VIDEO PB RF terminal/RP extension tool
  TRIG : SW'ING PULSE terminal/RP extension tool
  GND : GND terminal/RP extension tool
(2) Playback the alignment tape.
(3) Turn the tracking control potentiometer on the front panel until the center part of the RF waveform is maximum. (Fig. 2)
(4) Turn the upper flange of the TG-5 guide until the RF waveform at the entrance side is virtually flat. (Fig. 3)
(5) Turn the upper flange of the TG-8 guide until the RF waveform at the exit side is virtually flat. (Fig. 4)
(6) Turn the tracking control potentiometer until the center part of the RF waveform is maximum.
(7) Press the EJECT button, and remove the alignment tape.

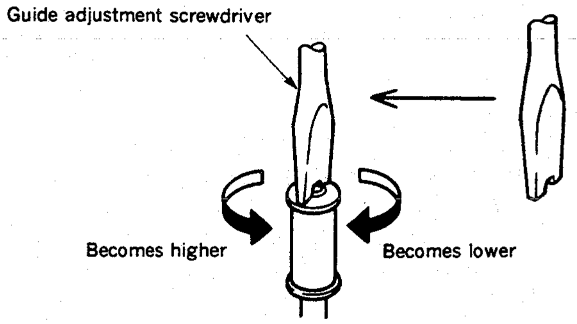

Guide adjustment screwdriver
Becomes higher
Becomes lower

Fig. 1 Tape Guide Height Adjustment Method.

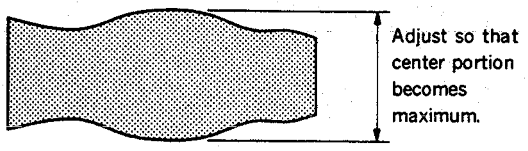

Adjust so that center portion becomes maximum.

Fig. 2

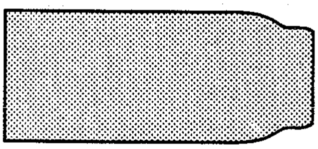


Fig. 3

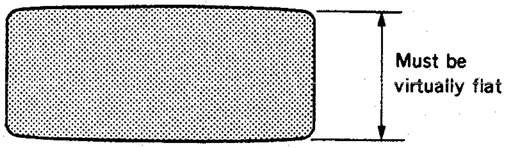

Must be virtually flat

Fig. 4

6-2. TAPE TENSION ADJUSTMENT

Tools :

Tentelometer (T2-H7-UMC)

S-VHS cassette tape (T-120)

Adjustment Procedure :

(1) To prevent the tape from touching the tentelometer, rotate the tape stabilizer in the direction of the arrow until it strikes the chassis (left), then insert the bamboo skewer, or the like, at point "a" shown in the figure, and fix it in place. (Fig. 1)

(2) Insert a cassette tape (T-120) in the VTR, then put the VTR into the PLAY mode.

(3) Install the tentelometer between the TG-3 guide and the TG-5 guide. (Fig. 1)

(4) Adjust RV301/SS board (D-9) so that the value on the tentelometer meet the required specification 1.

(5) Enter the SEARCH REV mode.

(6) Adjust RV302/SS board (D-9) so that the value on the tentelometer meet the required specification 2.

(7) Enter the PAUSE mode.

(8) Adjust RV305/SS board (D-9) so that the value on the tentelometer meet the required specification 3.

(9) Confirm that each of the tape tensions meet the required specification 1 and 3. During PLAY mode, tape tension required as Spec. 1, and PAUSE mode, tape tension required as Spec. 3.

(10) Confirm that each of the tape tensions meet the required specifications 2 and 3. During SEARCH REV mode, tape tension required as Spec. 2, and PAUSE mode, tape tension required as Spec. 3.

(11) Remove the tentelometer and bamboo skewer, then press the EJECT button and remove the cassette tape.

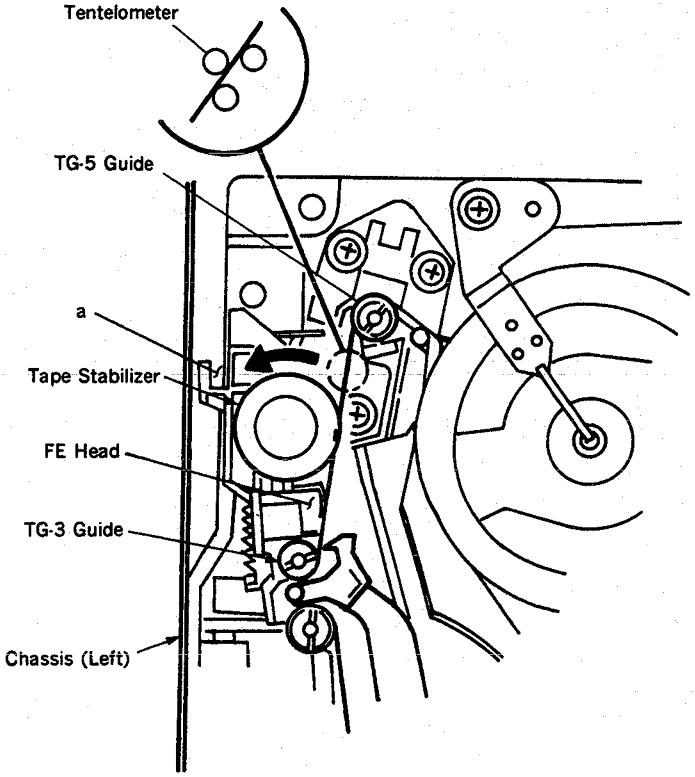


Fig. 1

Spec. 1 : Tape tension in the PLAY mode
[245±25]×10^{-3} N (25.0±2.5 g)

Spec. 2 : Tape tension in the SEARCH REV mode
[392±25]×10^{-3} N (40.0±2.5 g)

Spec. 3 : Tape tension in the PAUSE mode
[216±20]×10^{-3} N (22±2 g)

6-3. TRACKING ADJUSTMENT

Tools :
Oscilloscope
RP extension tool (J-6381-370-A)
Guide adjustment screwdriver (J-6082-044-A or J-6080-811-A)
Alignment tape (KRV-5821NSA)

Cleaning prior to adjustment :
Clean the following parts with a cleaning piece moistened with cleaning fluid.

- TG-1 to TG-9, RVS and F • R tape guides
- Audio head, FE head, capstan, pinch roller
- Rotary head, tape run face of upper and lower drums

[Note : Method of cleaning the rotary head]
Press the cleaning piece gently against the rotary head, then rotate the upper drum slowly in the counterclockwise direction with the fingers to clean the head.

Adjustment Procedure :

(1) Connect the oscilloscope as follows.
CH-1 : VIDEO PB RF terminal/RP extension tool
TRIG : SW'ING PULSE terminal/RP extension tool
GND : GND terminal/RP extension tool

(2) Playback the alignment tape.

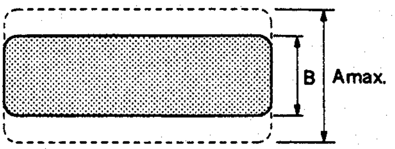
Entrance side adjustment :

(3) Turn the tracking control potentiometer on the front panel until the RF waveform is 70 to 80% of maximum. (Fig. 1)

(4) Turn the upper flange of the TG-5 guide clockwise until the RF waveform at the left hand side is as shown in Fig. 2.

(5) Turn the upper flange on the TG-5 guide in the counterclockwise direction until the RF waveform at the left hand side is flat. (Fig. 3)
Note :
- Complete the height adjustment of TG-5 with the guide turned counterclockwise.

(6) Turn the tracking control potentiometer on the front panel counterclockwise until the RF waveform is 70 to 80% of maximum, then confirm that the RF waveform at the left hand side is virtually flat. (Fig. 4)



$$\frac{B}{Amax.} = 0.7 \text{ to } 0.8$$

Fig. 1

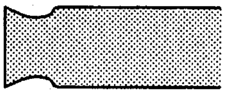


Fig. 2

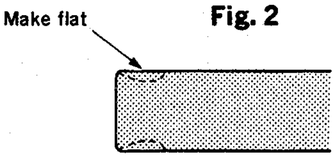
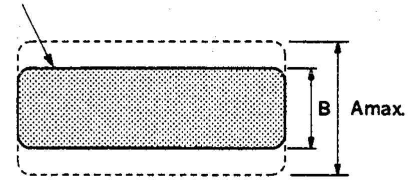


Fig. 3



Spec. :
RF waveform at entrance side must be virtually flat when $\frac{B}{Amax.} = 0.7$ to 0.8.

Fig. 4

Exit side adjustment:

(7) Turn the tracking control potentiometer on the front panel until the RF waveform is 70 to 80% of maximum. (Fig. 1)

(8) Turn the upper flange of the TG-8 guide clockwise until the RF waveform on the right hand side is as shown in Fig. 5.

(9) Turn the upper flange of the TG-8 guide counterclockwise until the RF waveform on the right hand side is Fig. 6.

Note:

- Complete the height adjustment of TG-8 with the guide turned counterclockwise.

(10) Confirm that the RF waveform on the right hand side is Fig. 6 when the mode is switched from STOP to PLAY.

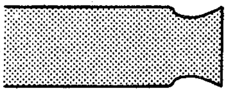
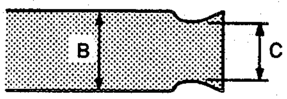


Fig. 5



$\frac{C}{B}=0.85$ to 0.95

Fig. 6

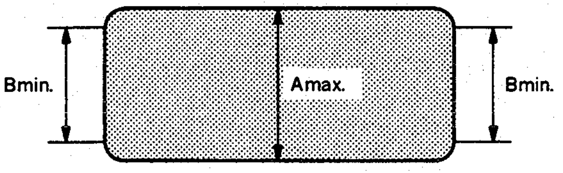
6-4. CHECKING AFTER TRACKING ADJUSTMENT

Tools :
Oscilloscope
RP extension tool (J-6381-370-A)
Alignment tape (KRV-5821NSA)

- Connect the oscilloscope as follows.
  CH-1 : VIDEO PB RF terminal/RP extension tool
  TRIG : SW'ING PULSE terminal/RP extension tool
  GND : GND terminal/RP extension tool

6-4-1. RF Head-to-Tape Contact Check

(1) Playback the alignment tape.
(2) Turn the tracking control potentiometer on the front panel until the center of the RF waveform is maximum.
(3) Confirm that the RF waveform meet the specification.



Spec. :
$\frac{\text{Bmin.}}{\text{Amax.}} \geqq 0.8$

6-4-2. RF Rise Check

(1) Playback the alignment tape.
(2) Turn the tracking control potentiometer on the front panel until the center of the RF waveform becomes maximum.
(3) Put the VTR in each of the following modes in turn, and confirm that the rise time of the RF waveform meet the specification. (Fig. 1)
① SEARCH REV → PLAY
② SEARCH FWD → PLAY
③ STOP → PLAY
(4) Enter the SEARCH REV mode, and confirm that there is no missing of the RF waveform at the entrance side. (Fig. 2)

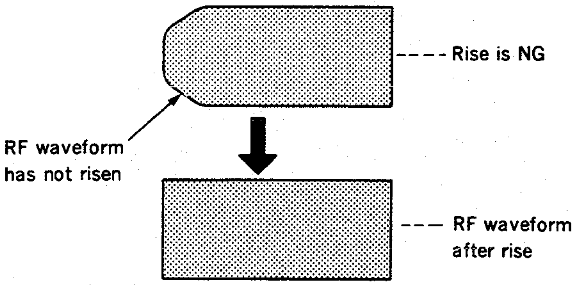


Fig. 1

Spec. :	RF rise time
① SEARCH REV → PLAY	Within 3 s
② SEARCH FWD → PLAY	Within 3 s
③ STOP → PLAY	Within 3 s

- The rise time is the time from when the RF waveform appears on the oscilloscope.

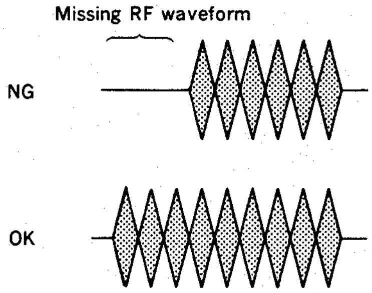


Fig. 2

6-5. SEARCH REV x10 NORMAL SPEED CHECK

Tools :

Oscilloscope
Alignment tape (KRV-51HN or KRV-45HNS)
RP extension tool (J-6381-370-A)
Remote controller (SVRM-100, RM-V100, or RM-V200)

Checking Procedure :

(1) Connect the oscilloscope as follows.
CH-1 : VIDEO PB S-VHS RF terminal/RP extension tool
TRIG : SW'ING PULSE terminal/RP extension tool
GND : GND terminal/RP extension tool

(2) Load the alignment tape in the VTR.

(3) Using the remote controller, enter the SEARCH REV mode (x10 times normal speed), and play back the color bars that were recorded in the SP mode.

(4) Confirm that an RF waveform appears at SP1, SP2, EP1 and EP2. (Fig. 1) Also, confirm that an RF waveform appears at the entrance side. (Fig. 2 and Fig. 3)

If there is not appear the RF waveform.

Check the following points.

① Does the tape curl or become wrikled between the TG-5 guide, drum and the TG-8 guide ?
If curling or wrinkling occurs → re-adjust the height of the TG-5 and TG-8 guides.

② Check the circuit between pin 23 of IC201 (D-2)/ RP-62 board and pin 2 of CN804/RP-62 board.

③ Confirm that the voltage input to pin 28 of IC201/RP-62 board is between +2.15 and +2.7 V.

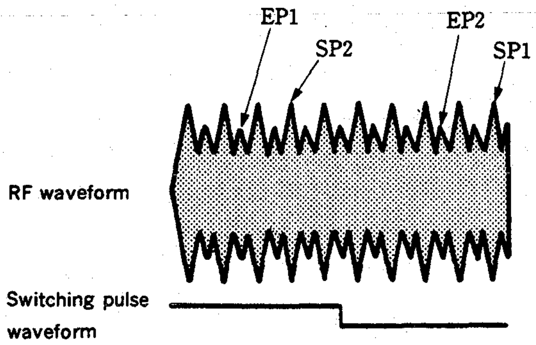

EP1
SP2
EP2
SP1
RF waveform
Switching pulse waveform

Fig. 1

Example-1 of NG

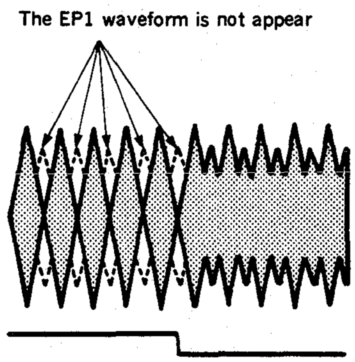

The EP1 waveform is not appear

Fig. 2

Example-2 of NG

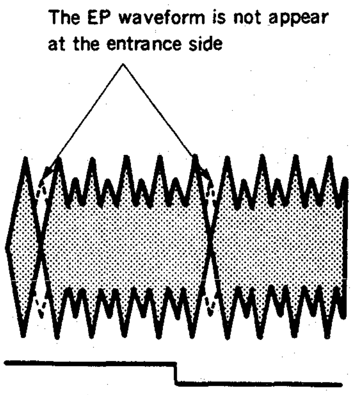

The EP waveform is not appear at the entrance side

Fig. 3

6-6. TG-9 GUIDE HEIGHT ADJUSTMENT

Tools :

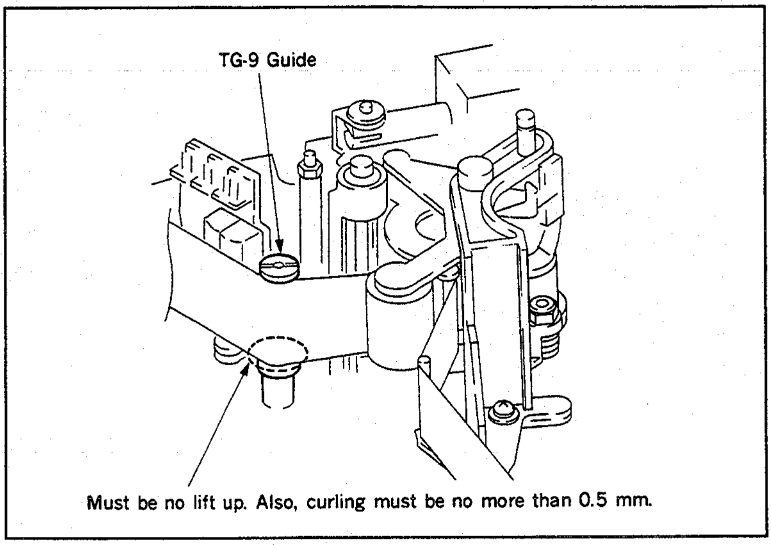
S-VHS cassette tape (T-160)

Guide adjustment screwdriver (J-6082-044-A or J-6080-811-A)

Adjustment Procedure :

(1) Insert a cassette tape (T-160) in the VTR, then put the VTR in the PLAY mode.

(2) Turn the upper flange of the TG-9 guide, and pass the tape along the lower flange.


TG-9 Guide
Must be no lift up. Also, curling must be no more than 0.5 mm.

6-7. RVS GUIDE HEIGHT ADJUSTMENT

Tools :

S-VHS cassette tape (T-160)

Box screwdriver (width 5.5 mm)

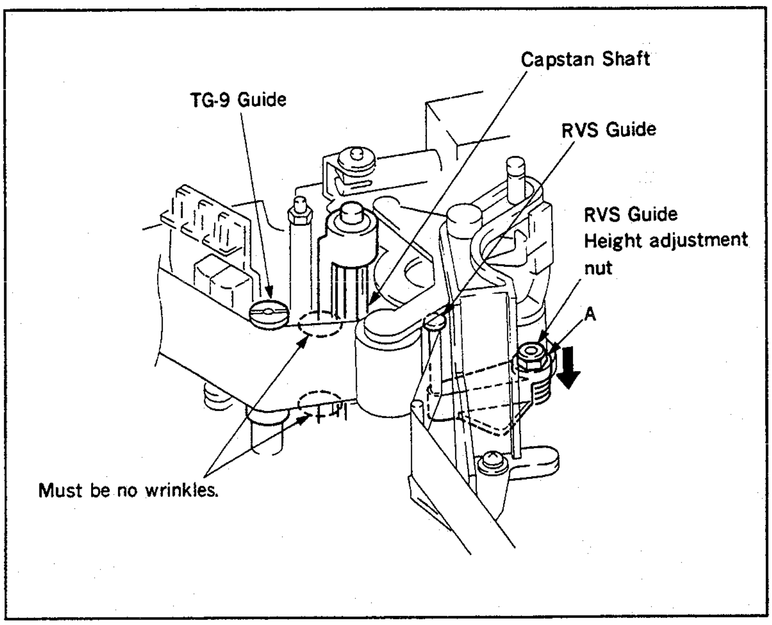
Adjustment Procedure :

(1) Enter the Search REV mode using the first 10 minutes or less of the tape.

(2) Turn the RVS guide height adjustment nut until wrinkling of the tape between the TG-9 guide and the capstan shaft that occurs when the VTR is switched from the search REV mode to the search FWD mode, or vice-versa, disappears in less than 3 seconds.

Direction of adjustment of RVS guide height adjustment nut

If the wrinkling of the tape decreases when part A indicated in the figure (bottom of adjustment nut) is pressed in the direction of the arrow, turn the RVS guide height adjustment nut clockwise. If the wrinkling increases, turn the nut counterclockwise.


Capstan Shaft
TG-9 Guide
RVS Guide
RVS Guide Height adjustment nut
A
Must be no wrinkles.

6-8. TAPE RUNNING CHECK (check to be performed subsequent to adjustments of sections 6-1 to 6-7)

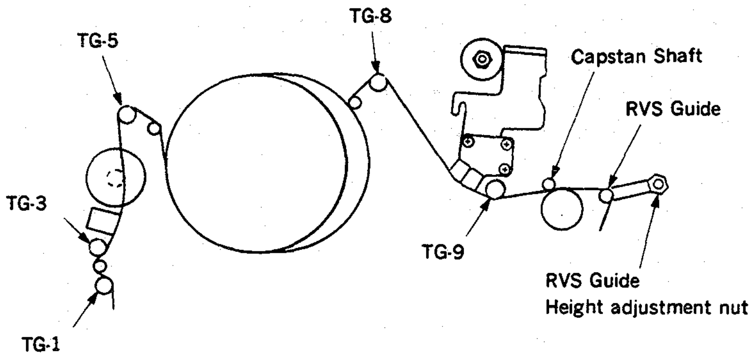
Tool:
S-VHS cassette tape (T-160)

Checking Procedure:

(1) Insert a cassette tape (T-160) in the VTR.
(2) Confirm that the curling of the tape at the TG-1, TG-3, TG-5, TG-8 and TG-9 guides in both the SEARCH FWD and SEARCH REV modes meet the specification.

If the specification is not satisfied:

(3) Re-adjust the TG-9 and RVS guides height according to sub-sections 6-6 and 6-7.
(4) Check step (2).


TG-8
TG-5
Capstan Shaft
RVS Guide
TG-3
TG-9
RVS Guide
Height adjustment nut
TG-1

Spec.:
TG-1, TG-3, TG-5, TG-8, TG-9 Guides ...... Tape curling must be within 1 mm.

6-9. AUDIO HEAD HEIGHT ADJUSTMENT

Tools:

Oscilloscope
X value adjustment tool (J-6380-710-A)
Alignment tape (KRV-5821NSA or JVC-MH-1)
Box screwdriver (width 5.5 mm)
Connecting cables (two) (to be provided by the service side)....Fig. 1

Connecting the tool:

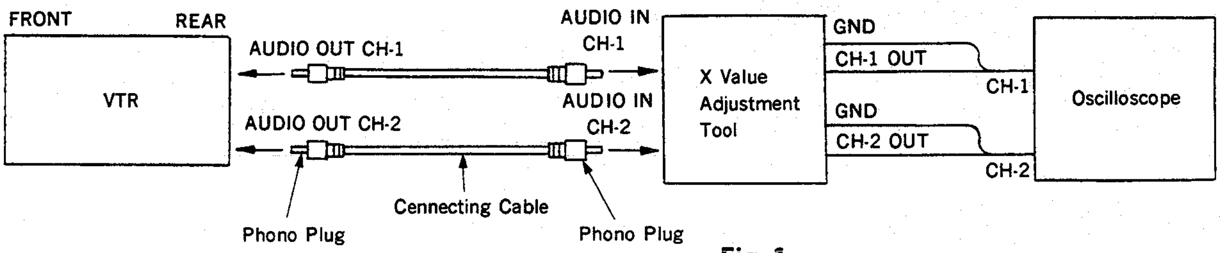

FRONT
REAR
VTR
AUDIO OUT CH-1
AUDIO OUT CH-2
AUDIO IN CH-1
AUDIO IN CH-2
X Value Adjustment Tool
GND
CH-1 OUT
GND
CH-2 OUT
CH-1
CH-2
Oscilloscope
Cennecting Cable
Phono Plug
Phono Plug

Fig. 1

Adjustment Procedure:

(1) Set the switch on the X value adjustment tool to the 1 kHz side.
(2) Turn the POWER switch of the X value adjustment tool ON.
(3) Playback the alignment tape (KRV-5821NSA). (When using JVC-MH-1 tape, playback the 1 kHz part.)
(4) Turn the audio head height adjustment nut until the level of both CH-1 and CH-2 is maximum. (Fig. 2 and Fig. 3)

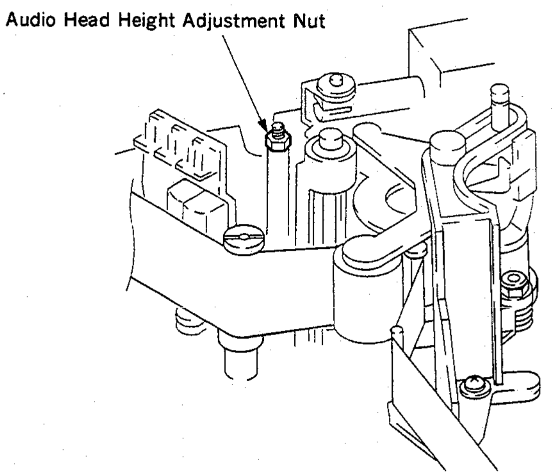

Audio Head Height Adjustment Nut

Fig. 2

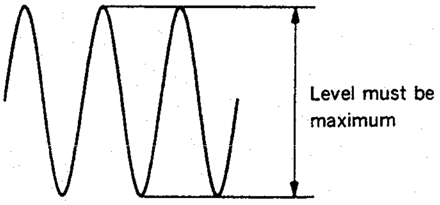

Level must be maximum

Fig. 3

6-10. AUDIO HEAD AZIMUTH ADJUSTMENT

Tools:
Oscilloscope
X value adjustment tool (J-6380-710-A)
Alignment tape (KRV-5821NSA or JVC-MH-1)
Connecting cables (two) (See sub-section 6-9.)

Connecting the tool: Same as sub-section 6-9

Adjustment Procedure:

(1) Set the switch on the X value adjustment tool to the 7 kHz side.

(2) Playback the alignment tape (KRV-5821NSA). (When using JVC-MH-1 tape, playback the 7 kHz part.)

Output level adjustment

(3) Turn the azimuth adjustment screw until the resurge waveform on the oscilloscope meet the specification 1. (Fig. 1 and Fig. 2)

Azimuth adjustment

(4) Turn the azimuth adjustment screw until the resurge waveform on the oscilloscope meet the specification 2. (Fig. 2)

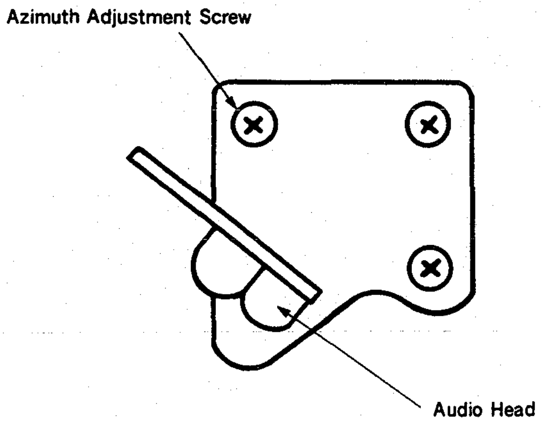


Fig. 1

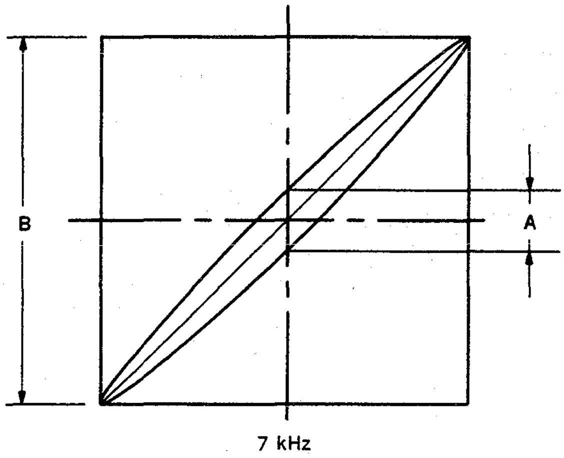


Fig. 2

Spec. 1:
B must be the maximum level.

Spec. 2:
A must be no more than 1 cm when level B is 6 cm.

6-11. AUDIO HEAD HEAD-TO-TAPE CONTACT CHECK

Tools:
Oscilloscope
X value adjustment tool (J-6380-710-A)
Alignment tape (KRV-5821NSA or JVC-MH-1)
Connecting cables (two) (See sub-section 6-9.)

Connecting the tool: Same as sub-section 6-9

Checking Procedure:

(1) Set the switch on the X value adjustment tool to the 7 kHz side.

(2) Playback the alignment tape (KRV-5821NSA). (When using JVC-MH-1 tape, playback the 7 kHz part.)

Level fluctuation check

(3) Confirm that the level fluctuation of both CH-1 and CH-2 meet the specification. (Fig. 1)

If the specification is not satisfied:

(4) Turn the TG-9 guide counterclockwise until the specification is satisfied. (Fig. 2) (Tape curling must be no more than 0.5 mm.)

(5) Return to sub-section 6-7 and repeat adjustment up to sub-section 6-10.

(6) Check step (3).

Output level check

(7) Press the top of the tape (AUDIO track part) as indicated by the arrow gently with the tip of the finger, and confirm that the increase in level conforms to the specification for both CH-1 and CH-2. (Fig. 2 and Fig. 3)

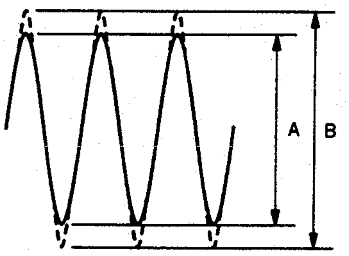
If the specification is not satisfied:

(8) Turn the zenith adjustment screw of the audio head 90° clockwise.

(9) Return to sub-section 6-6 and repeat adjustment up to sub-section 6-10.

(10) Check steps (3) and (7).

Level Fluctuation



Spec.:
A≧0.9B

Fig. 1

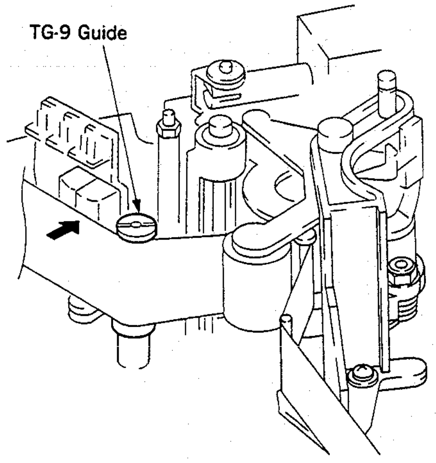
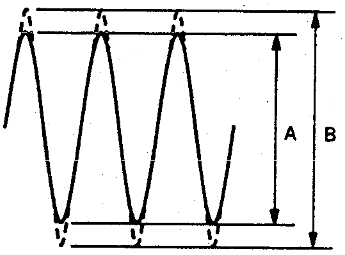


Fig. 2

Output Level



Spec.:
B≦1.1A

A: Initial level
B: Level when the tape is pressed with the finger.

Fig. 3

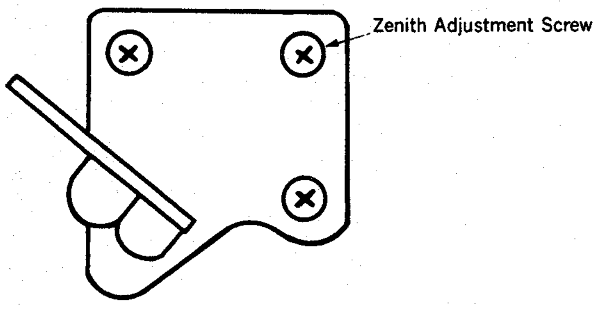


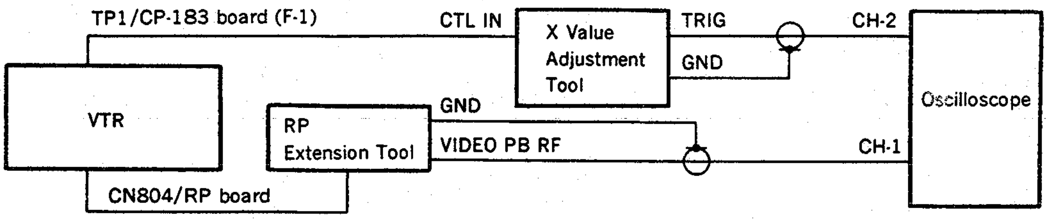
Fig. 4

6-12. X VALUE ADJUSTMENT (AUDIO HEAD POSITION ADJUSTMENT)

Tools :

Oscilloscope
X value adjustment tool (J-6380-710-A)
RP extension tool (J-6381-370-A)
Alignment tape (KRV-5821NSA)
Box screwdriver (width 5.5 mm)
Connecting cable

Connecting the tool :


TP1/CP-183 board (F-1)
CTL IN
X Value Adjustment Tool
TRIG
GND
CH-2
VTR
RP Extension Tool
GND
VIDEO PB RF
CH-1
Oscilloscope
CN804/RP board

Change mode of oscilloscope from "TRIG MODE" to "NORM".

Adjustment Procedure :

(1) Playback the alignment tape.
(2) Turn the tracking control potentiometer on the front panel to the 「FIXED」 position.
(3) Turn the AC adjustment screw until the positions of the CTL waveform and RF waveform meet the specification 1. (Fig. 1 and Fig. 2)
(4) Change the connection to the oscilloscope as follows.
TRIG : SW'ING PULSE terminal/RP extension tool
(5) Turn the AC adjustment screw until the center of the RF waveform is the maximum level. Confirm that the RF waveform meet the specification 2. (Fig. 3)
(6) Turn the tracking control potentiometer on the front panel left and right, and confirm that the center of the RF waveform is the maximum level when the potentiometer is at the 「FIXED」 position. (specification 3)

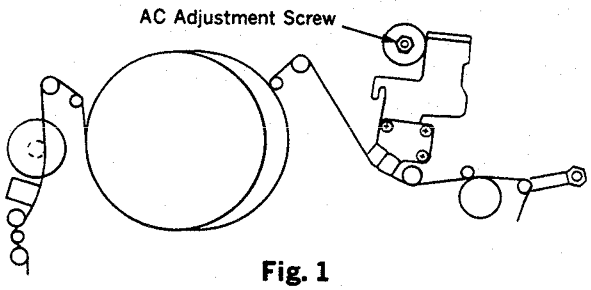

AC Adjustment Screw

Fig. 1

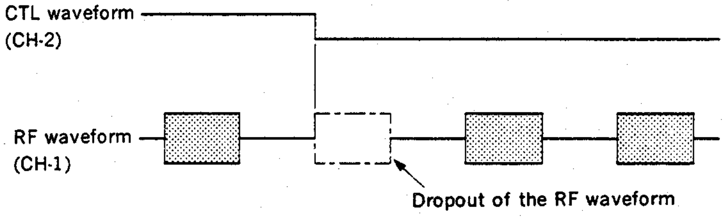
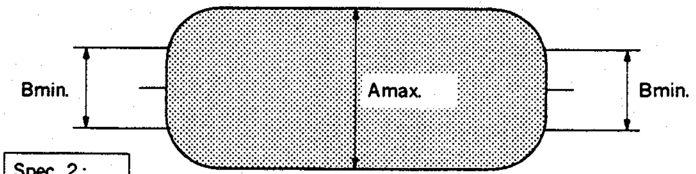

CTL waveform
(CH-2)
RF waveform
(CH-1)
Dropout of the RF waveform

Fig. 2

Spec. 1 :
The point where the RF waveform has dropout must coincide with the falling edge of the CTL waveform.
If the RF waveform dropout point has shifted to the right at the CTL datum....Turn the AC adjustment screw counterclockwise.
If the RF waveform dropout point has shifted to the left at the CTL datum....Turn the AC adjustment screw clockwise.


Bmin.
Amax.
Bmin.

Spec. 2 :
$\frac{Bmin.}{Amax.} \geq 0.8$

Fig. 3

Spec. 3 :
The center part of the RF waveform must be the maximum level when the tracking control potentiometer is at the 「FIXED」 position.

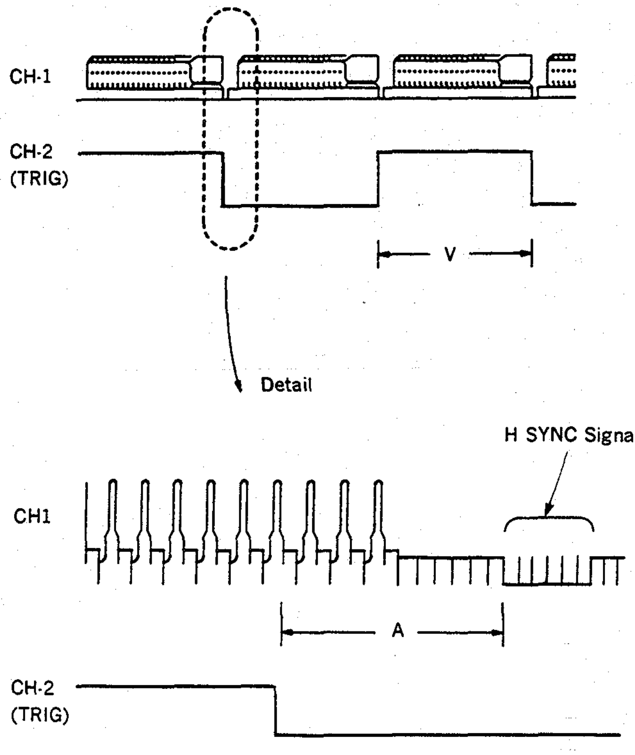
6-13. SWITCHING POSITION ADJUSTMENT

Tools :

Oscilloscope
RP extension tool (J-6381-370A)
Alignment tape (JVC-MH-1)

Adjustment Procedure :

(1) Connect the oscilloscope as follows.
    CH-1 : TP304/VO board (D-2)
    TRIG : SW'ING PULSE terminal/RP extension tool
    GND : GND terminal/RP extension tool
(2) Playback the color bar part of the alignment tape.
(3) Set the tracking control potentiometer on the front panel to the 「FIXED」 position.
(4) Turn RV102 (D-9) on the SS board until the specification is satisfied.



Spec. :
A=6.5±0.5 H
(410±30 μs)

6-14. TAPE RUNNING CHECK (FF, REW MODE)

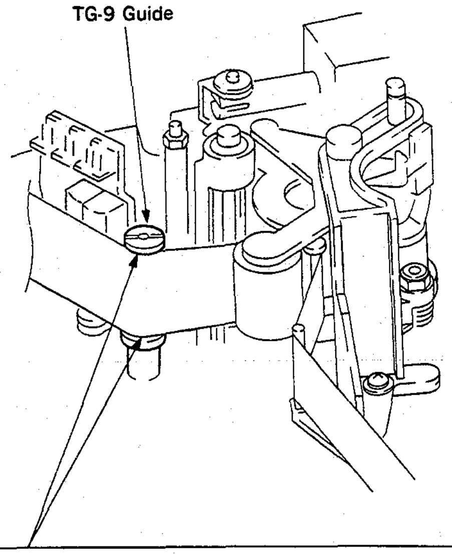
Tool :
S-VHS cassette tape (T-160)

Checking Procedure :

(1) Insert the cassette tape (T-160) into the VTR.
(2) Press the FF button.
(3) Confirm that the tape travels without riding up on the upper or lower flange of the TG-9 guide for about 15 seconds after the VTR goes into the FF mode.
(4) Press the REW button.
(5) Confirm that the tape travels without riding up on the upper or lower flange of the TG-9 guide for about 15 seconds after the VTR goes into the REW mode.

If specification is not satisfied :

(6) Re-adjust the RVS guide height according to sub-section 6-7.
(7) Check steps (2) to (5).



Spec. :
The tape must not ride up on the upper or lower flange.

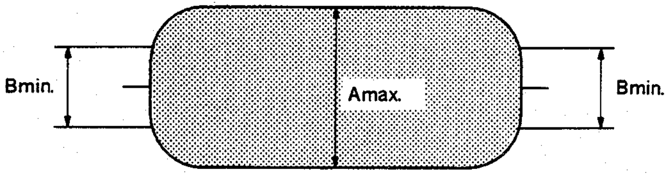
6-15. SELF RECORDING/PLAYBACK CHECK

Tools:

Oscilloscope
S-VHS cassette tape (T-120)
RP extension tool (J-6381-370-A)

Checking Procedure:

(1) Connect the oscilloscope as follows.
  CH-1: VIDEO PB S-VHS RF terminal/RP extension tool
  TRIG: SW'ING PULSE terminal/RP extension tool
  GND: GND terminal/RP extension tool
(2) Set the tracking control potentiometer on the front panel to the 「FIXED」 position.
(3) Perform recording under no-signal conditions using the center part of the cassette tape (T-120).
(4) Confirm that the playback RF waveform meet the specification. (Fig. 1)
(5) After tape run alignments has been completed, apply locking compound to the AC adjustment screw, and also the audio head azimuth and zenith adjustment screw. (Fig. 2)


Bmin.
Amax.
Bmin.

Spec.:
$\frac{\text{Bmax.}}{\text{Amax.}} \geqq 0.7$

Fig. 1

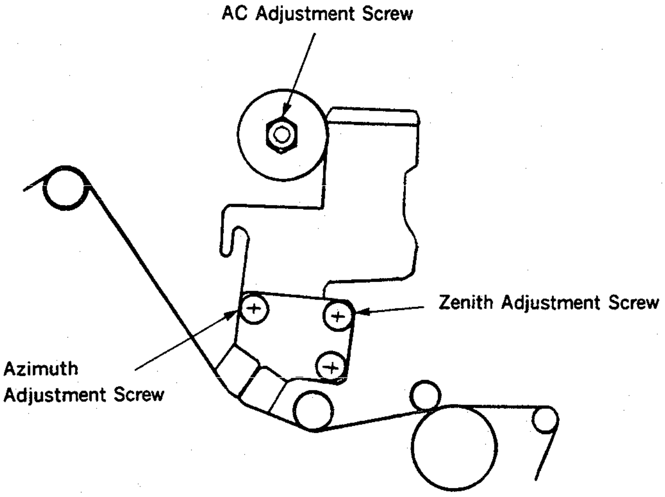

AC Adjustment Screw
Zenith Adjustment Screw
Azimuth Adjustment Screw

Fig. 2

SECTION 7
ELECTRICAL ALIGNMENT OVERVIEW

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AU-161 board		Page
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RV9	CH-2 AFM DEVIATION	9-4
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CV801	CPI EQ2 PHASE	10-14
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7-2. EQUIPMENT USED FOR ELECTRICAL ALIGNMENT

It is recommended to use either the equipment described below or equivalents as measure equipment and signal generator.

[Measure Equipment]

- Oscilloscope (TEKTRONIX 2445B/150 MHz or more)
- Waveform Monitor/Vector Scope (TEKTRONIX 1750A)
- Audio Level Meter (HEWLETT PACKARD HP3400)
- Frequency Counter (ADVANTEST TR5821AK)
- Digital Voltmeter

[Signal Generator]

- Multiformat Signal Generator (TEKTRONIX TSG-130 with S-VIDEO OUT)
- Audio Signal Generator (HEWLETT PACKARD HP8904)

[Tool]

- RP Extension Tool (Sony Part No. J-6381-370-A)
- Video Cable with S connector
- S-BNC Video Cable (Sony Part No. J-6381-380-A)
- Y/C Delay Adjustment Tool (Sony Part No. J-6381-900-A)
- Alignment Tape
  KRV-31NS (Sony Part No. 8-192-603-11) (when KRV-45NS is not available)
  KRV-35NF (Sony Part No. 8-192-603-51) (when KRV-45NS is not available)
  KRV-39NF (Sony Part No. 8-192-603-91)
  KRV-45NS (N-VHS) (Sony Part No.: pending)
  KRV-45HNS (S-VHS) (Sony Part No.: pending)
  KRV-51HN (S-VHS) (Sony Part No. 8-192-605-21) (when KRV-45HNS in not available)
  KRV-51N (N-VHS) (Sony Part No. 8-192-605-31) (when KRV-45NS is not available)
- Blank Tape
  N-VHS Tape (GR-120KG: Sony Part No. 8-896-024-94)
  S-VHS Tape

7-3. ELECTRICAL ADJUSTMENT ASSOCIATED WITH INSPECTION AND MAINTENANCE

7-3-1. Adjustment for Drum Ass'y or Upper Drum Ass'y Replacement

9-4. AFM PB RF Level Adjustment
9-5. AFM REC RF Level Adjustment
10-25. S-VHS Y REC Current Adjustment
10-26. N-VHS Y REC Current Adjustment
10-27. S-VHS Chroma REC Current Adjustment
10-28. Overall Y/C Delay Adjustment

7-3-2. Adjustment for Audio Head Ass'y Replacement

9-9. LAU PB Level Adjustment
9-10. LAU PB Frequency Response Adjustment
9-11. LAU REC Level Adjustment
9-12. LAU Overall Frequency Response Adjustment

7-3-3. Adjustment for Capstan Motor (SCV-0401A) Replacement

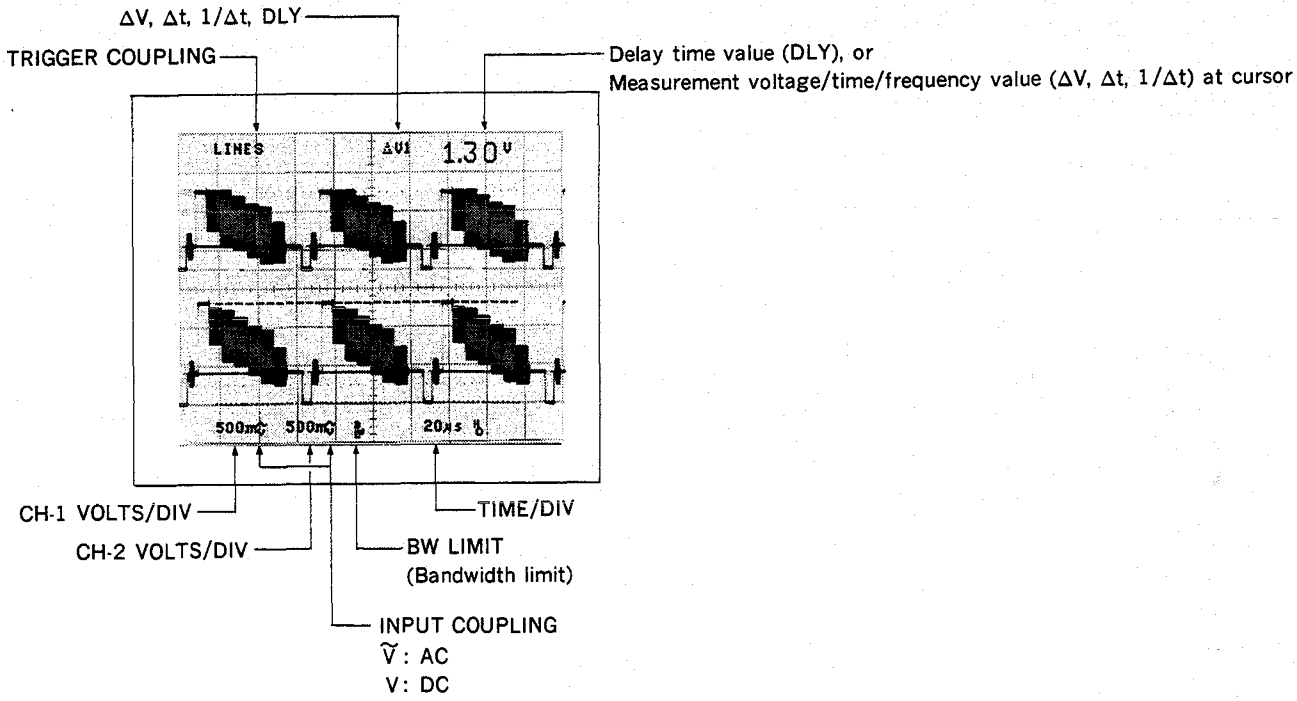
8-3. Capstan FG (B) Duty Ratio Adjustment
8-4. Capstan FG (A) Duty Ratio Adjustment
8-5. Capstan Stop Servo Error Adjustment

7-4. SETTING OF EQUIPMENT FOR ELECTRICAL ALIGNMENT

Oscilloscope

- With waveform photograph used for waveform display:

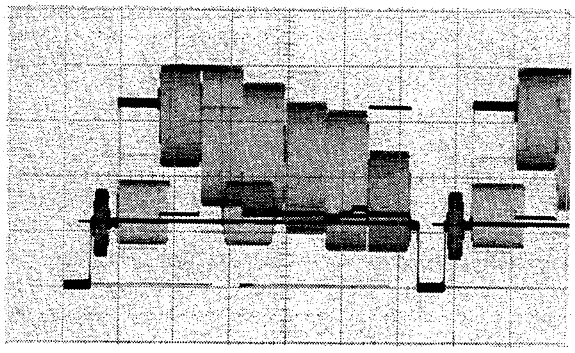
  The setting conditions are displayed on the photograph as given below.



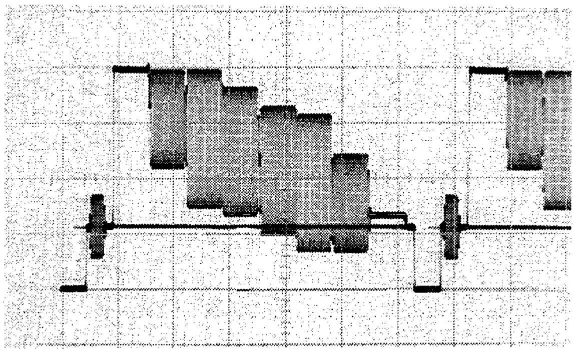
ΔV, Δt, 1/Δt, DLY
TRIGGER COUPLING
Delay time value (DLY), or
Measurement voltage/time/frequency value (ΔV, Δt, 1/Δt) at cursor
LINES
ΔV1
1.30V
500mV
500mV
20μs
CH-1 VOLTS/DIV
CH-2 VOLTS/DIV
TIME/DIV
BW LIMIT
(Bandwidth limit)
INPUT COUPLING
Ṽ: AC
V: DC

7-5. TEST SIGNAL FOR VIDEO SYSTEM

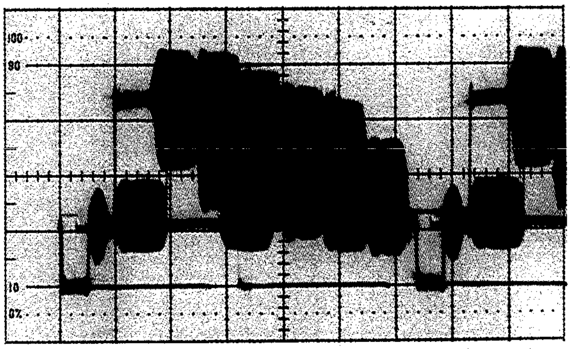
1. SMPTE COLOR BARS



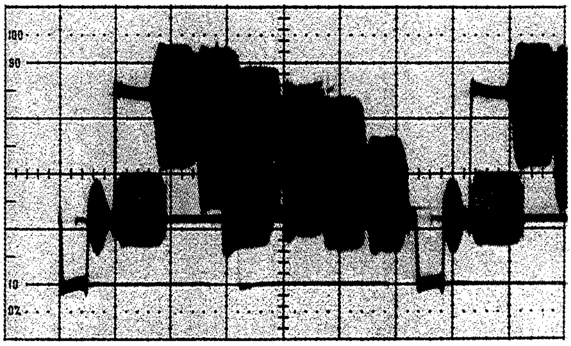
2. 75% COLOR BARS



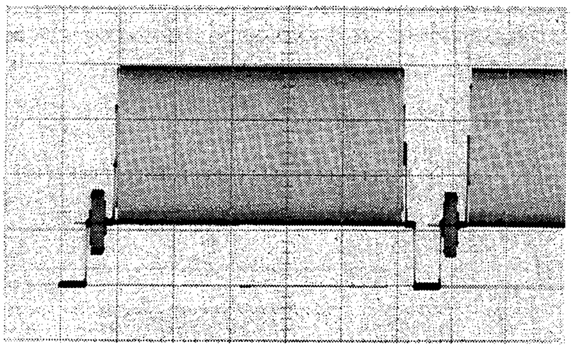
3. KRV-45HNS/KRV-51HN



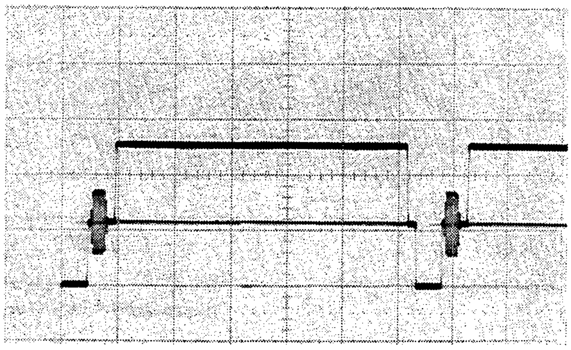
4. KRV-45NS/KRV-51N



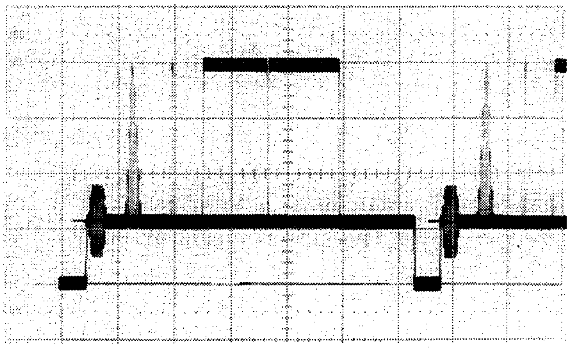
5. CHROMA NOISE



6. 50% FLAT FIELD



7. PULSE & BAR



SECTION 8
SYSTEM CONTROL AND SERVO SYSTEM ALIGNMENT

[Equipment Required]
- Digital voltmeter
- Oscilloscope
- S-VHS blank tape

8-1. +5.3 V REGULATOR ADJUSTMENT

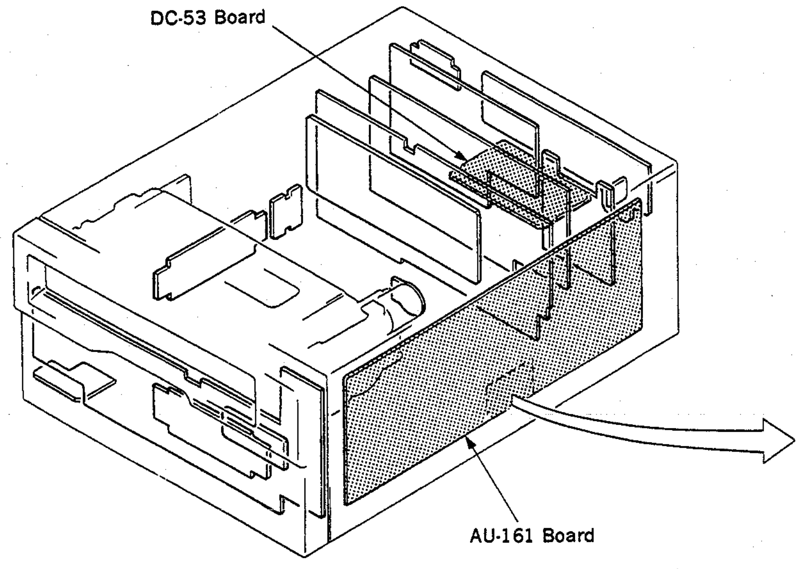
Step 1.

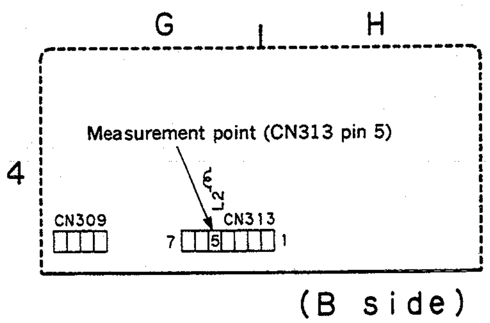
Machine condition for adjustment	Specifications	Adjustments
• Connect the digital voltmeter to connector pin.	CN313-5/AU-161 (G-4) $5.3^{+0}_{-0.1}$ V dc • When the specification is not satisfied, perform the adjustment described in Step 2.	

Step 2.

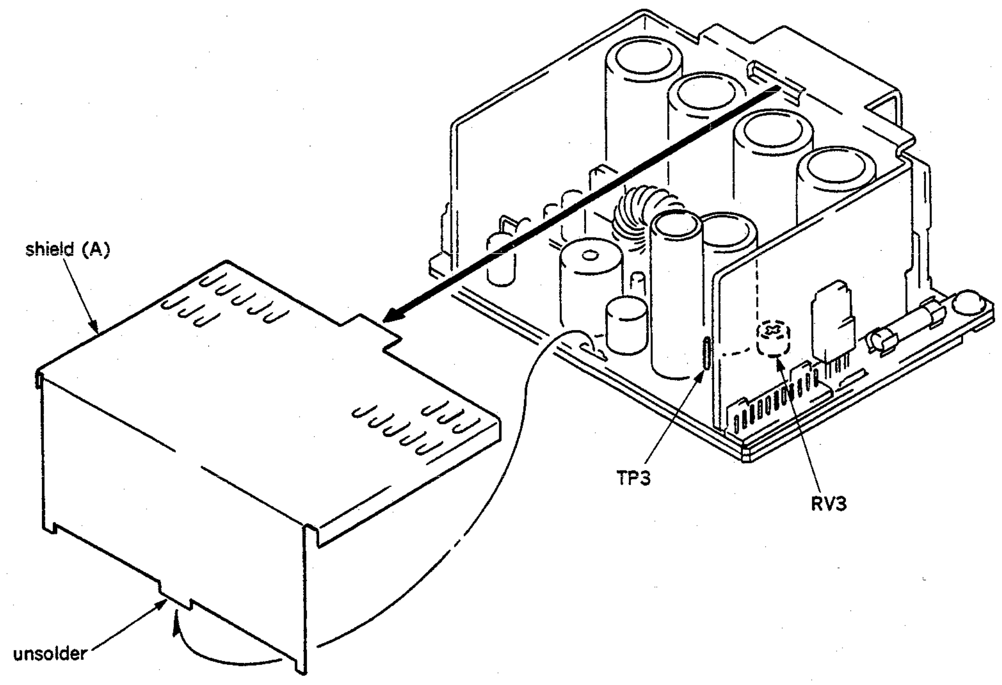
Machine condition for adjustment	Specifications	Adjustments
• POWER: OFF • Remove the DC-53 board according to section 2-7-1 on page 2-5. • Remove the shield (A) from DC-53 board by soldering iron. • Reconnect two connectors. • POWER: ON • Connect the digital voltmeter to test point (TP). • After adjustment, solder the shield (A) to DC-53 board, then install the DC-53 board according to section 2-7-1.	TP2/DC-53 (D-3) $5.3^{+0.1}_{-0}$ V dc	⊘ RV3/DC-53 (D-2)

Location of AU-161 board and DC-53 board.

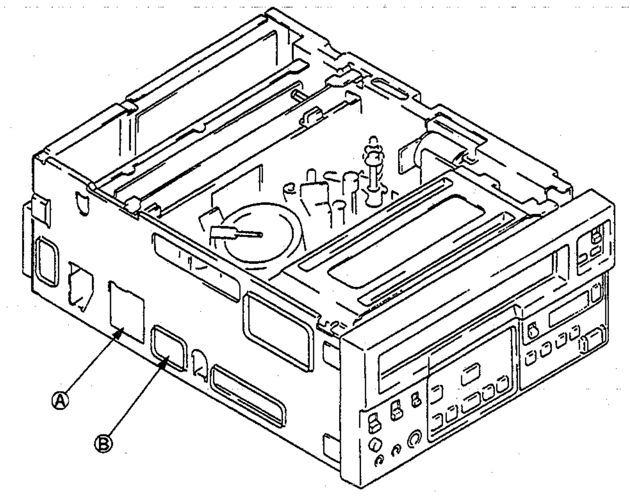

DC-53 Board
AU-161 Board

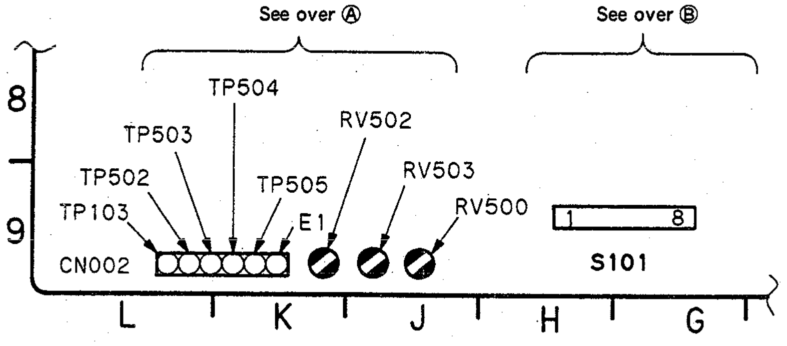

G
H
4
Measurement point (CN313 pin 5)
L2
CN309
CN313
7
5
1
(B side)

Remove the shield (A) from DC-53 board (Location of RV3 and TP3 on DC-53 board)

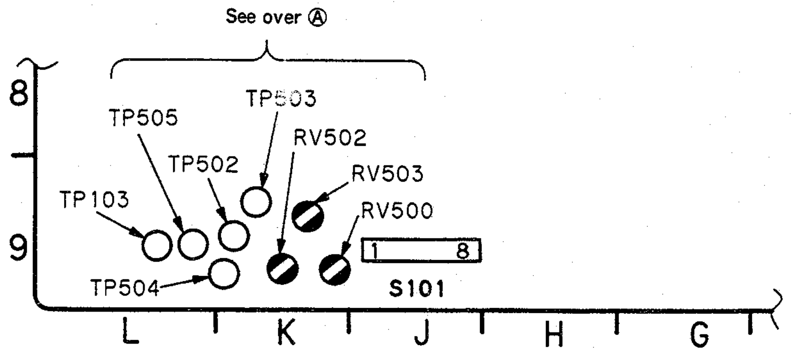

shield (A)
unsolder
TP3
RV3

Location of CN, E, RVs, S, and TPs on SS-49 board. (except Back-up Voltage Adjustment)

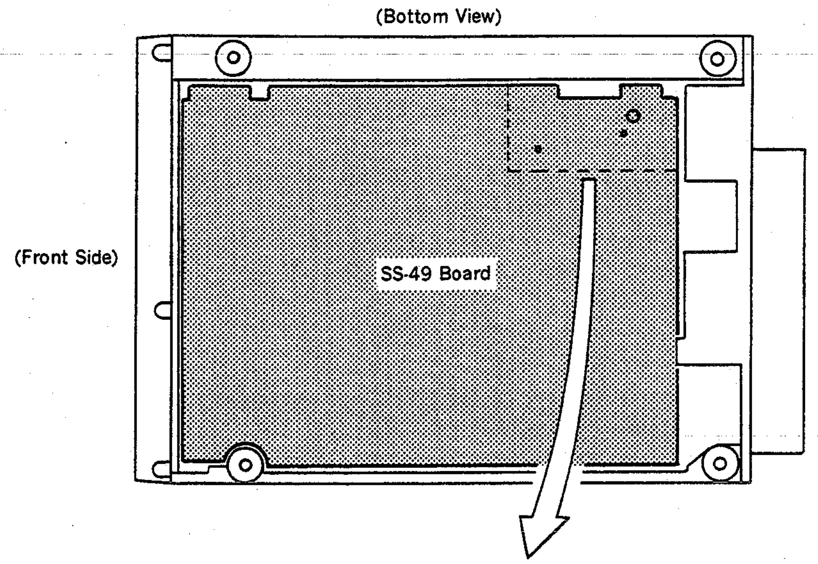


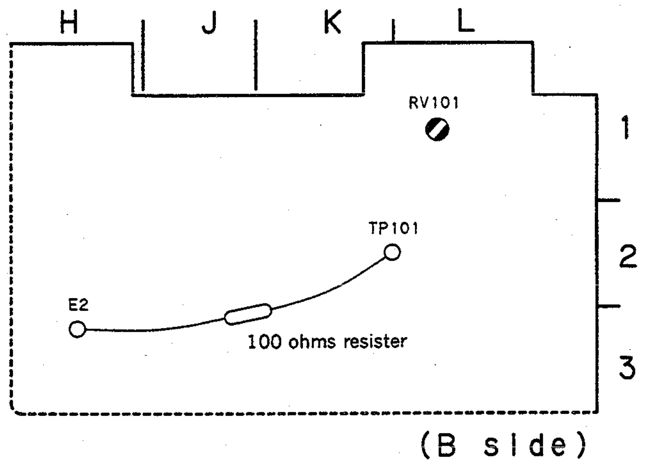

See over Ⓐ
See over Ⓑ
8
9
TP504
TP503
RV502
TP502
TP505
RV503
TP103
E1
RV500
1
8
CN002
S101
L
K
J
H
G

for S/N 10001 to 11620 of SVO-9500MD (Board No. 1-641-575-11)


See over Ⓐ
8
9
TP505
TP503
RV502
TP502
RV503
TP103
RV500
1
8
TP504
S101
L
K
J
H
G

Location of E2, RV101, and TP101 on SS-49 board. (for Back-up Voltage Adjustment)

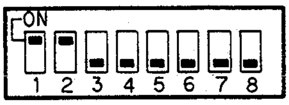
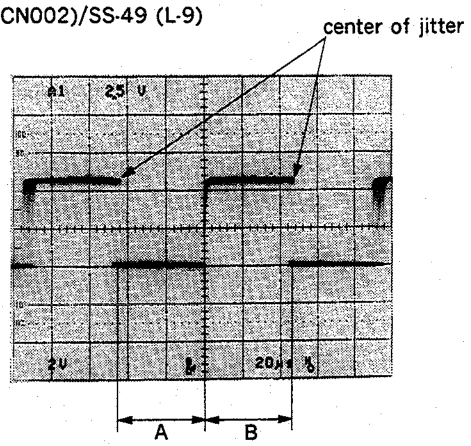

(Bottom View)
(Front Side)
SS-49 Board


H
J
K
L
RV101
1
TP101
2
E2
100 ohms resister
3
(B side)

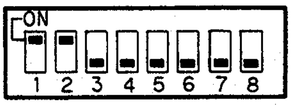
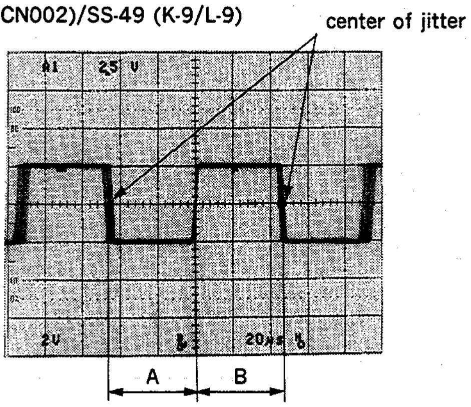
8-2. BACK-UP VOLTAGE ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• Stand up the VTR with the left side face downward. • Connect TP101/SS-49 (K-2) to E2/SS-49 (H-3) with a 100 ohms resistor. • POWER: ON • Connect the digital voltmeter to test point (TP). • After adjustment, remove the resistor.	TP101/SS-49 (K-2) $5.4^{+0}_{-0.1}$ V dc	⊘RV101/SS-49 (L-1)

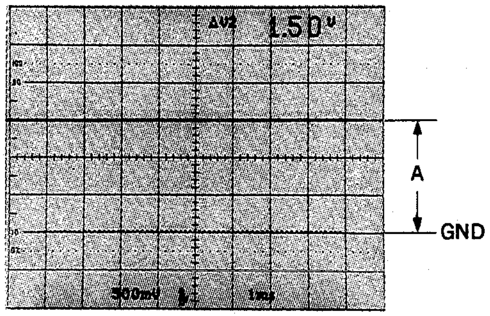
8-3. CAPSTAN FG (B) DUTY RATIO ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S101/SS-49 (H-9/J-9) No.1 : ON  S101 • Connect the oscilloscope to test point (TP). • Insert a S-VHS blank tape. • SEARCH FWD mode OSCILLOSCOPE • ×10 MAG: ON • After adjustment, set the S101 (No.1) to OFF.	TP103 (CN002)/SS-49 (L-9)  A=B (DUTY RATIO 0.50)	⊘RV503/SS-49 (J-9/K-9)

8-4. CAPSTAN FG (A) DURY RATIO ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S101/SS-49 (H-9/J-9) No.1 : ON  S101 • Connect the oscilloscope to test point (TP). • Insert a S-VHS blank tape. • SEARCH FWD mode OSCILLOSCOPE • ×10 MAG: ON • After adjustment, set the S101 (No.1) to OFF.	TP505 (CN002)/SS-49 (K-9/L-9)  A=B (DUTY RATIO 0.50)	⊘RV500/SS-49 (J-9/K-9)

8-5. CAPSTAN STOP SERVO ERROR ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• Connect between TP502 (CN002)/SS-49 (L-9) and TP503 (CN002)/SS-49 (K-9) with a shorting clip. • Connect the oscilloscope to test point (TP). • Insert a S-VHS bank tape. • REC PAUSE mode	TP504 (CN002)/SS-49 (L-9)  A=1.5±0.1 V dc • Remove the shorting clip, and check that TP103 (CN002)/ SS-49 (L-9) disappear a waveform on the oscilloscope.	⊘RV502/SS-49 (K-9)

SECTION 9
AUDIO SYSTEM ALIGNMENT

[Equipment Required]

- Oscilloscope
- Audio signal generator
- Audio attenuator
- Audio level meter
- Frequency counter
- RP extension tool
- S-VHS blank tape
- Alignment tapes

Alignment Tape Name (Part No.)	REC Mode	Contents	
		Video Area	Audio Area
KRV-39NF (8-192-603-91)	SP	• None	• RF
KRV-45NS (Part No. : pending)	SP	• Color bars 170 min	• Normal audio 170 min 7 kHz 15 seconds, 400 Hz 15 seconds (alternately) • Hi-Fi audio 170 min 400 Hz (stereo)
KRV-31NS (8-192-603-11) (when KRV-45NS is not available)	SP	• None	• Normal audio 7 kHz 15 seconds, 400 Hz 15 seconds (alternately)
KRV-31NF (8-192-603-51) (when KRV-45NS is not available)	SP	• Color bars	• Hi-Fi audio 400 Hz (stereo)

[Setting of switch &c.]

FRONT PANEL

- Hi-Fi recoding switch ....ON
- TRACKING control VR ....FIXED

[Setting of Menu]

- S-VHS recording selection ....SvH-At

[Note]

- Refer to section 1-8 Menu Operations on page 1-28 for the menu setting.
- 0 dBu=0.775 Vrms

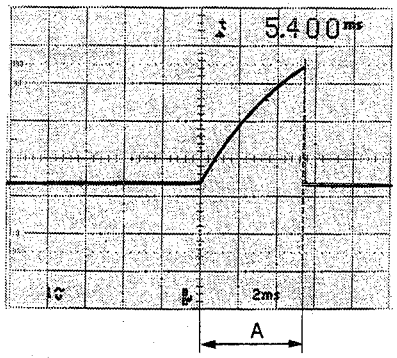
9-1. LINE OUT LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• CH-1, 2 AUDIO IN : 400 Hz, −10 dBu • AUDIO switch: Hi-Fi • Connect the audio level meter to AUDIO OUT. • Insert a S-VHS blank tape. • STOP (E-E) mode	CH-1 : AUDIO OUT CH-1/L (terminated with 47 kΩ) CH-2 : AUDIO OUT CH-2/L (terminated with 47 kΩ) −10.0±0.3 dBu	⊘CH-1 : RV10/AU-161 (C-3/D-3) ⊘CH-2 : RV11/AU-161 (D-3/C-3)

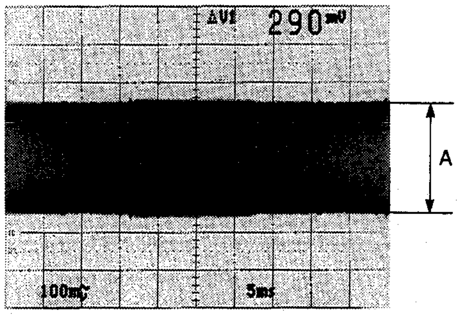
9-2. AFM CARRIER ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• CH-1, 2 AUDIO IN : no signal • Connect the frequency counter to test point (TP). • Insert a S-VHS blank tape. • REC mode	TP7/AU-161 (B-1/B-2) 1.300±0.005 MHz	●RV3/AU-161 (B-1)
	TP11/AU-161 (B-3/A-3) 1.700±0.005 MHz	●RV7/AU-161 (B-3/A-4)

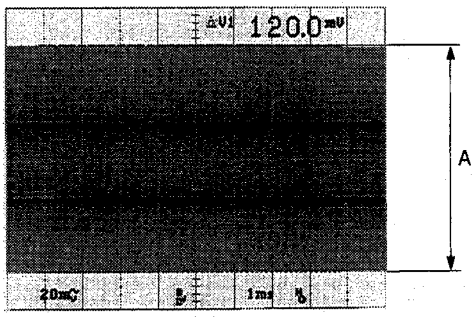
9-3. AFM SWITCHING POSITION ADJUSTMENT

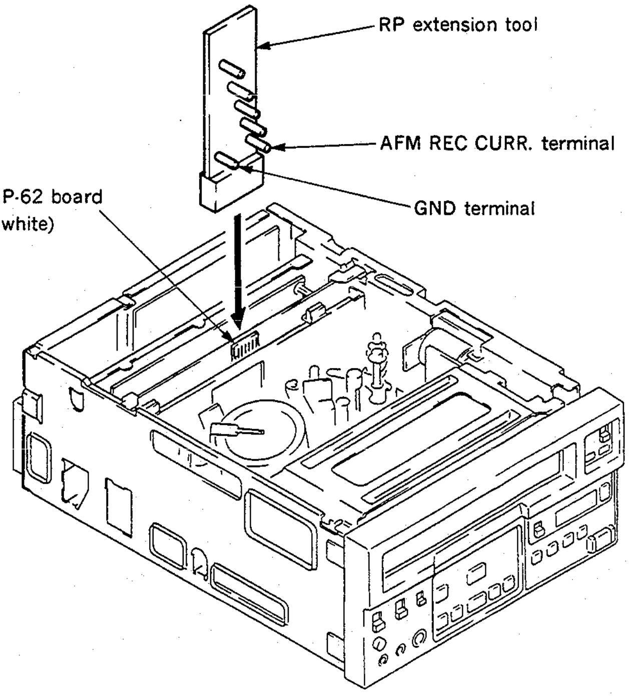
Machine condition for adjustment	Specifications	Adjustments
• Connect the oscilloscope to test point (TP). • Play back the alignment tape KRV-45NS or KRV-35NF.	TP3/AU-161 (A-2)  A=5.4±0.2 ms	●RV1/AU-161 (A-3)

9-4. AFM PB RF LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• TRACKING control VR : center click (FIXED) • Connect the oscilloscope to test points (TPs). • Play back the alignment tape KRV-39NF.	TP5/AU-161 (B-2/A-1)  A=300±10 mV p-p	●RV2/AU-161 (A-3) Trigger: TP3/AU-161 (A-2)

9-5. AFM REC RF LEVEL ADJUSTMENT

Machine condition for adjustment	**Specifications**	**Adjustments**
• CH-1, 2 AUDIO IN: no signal • Connect the oscilloscope to CN804 (pin 1) on RP-62 board. (When using the RP extension tool, connect the oscilloscope to AFM REC CURR. terminal.) • Insert a S-VHS blank tape. • REC mode	CN804-1/RP-62 (C-1) (RP extension tool: AFM REC CURR. terminal)  A=120±10 mV p-p	⊘RV6/AU-161 (B-3)


RP extension tool
AFM REC CURR. terminal
GND terminal
CN804 of RP-62 board
(6-pin, white)

9-6. AFM PB LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• AUDIO switch: Hi-Fi • Connect the audio level meter to AUDIO OUT. • Play back the alignment tape KRV-45NS or KRV-35NF.	CH-1 : AUDIO OUT CH-1/L (terminated with 47 kΩ) CH-2 : AUDIO OUT CH-2/R (terminated with 47 kΩ) −10.0±0.5 dBu	⊘CH-1 : RV4/AU-161 (B-1/A-1) ⊘CH-2 : RV8/AU-161 (B-4)

9-7. AFM DEVIATION ADJUSTMENT

Step 1.

Machine condition for adjustment	Specifications	Adjustments
• CH-1, 2 AUDIO IN : 400 Hz, −10 dBu • AUDIO switch: Hi-Fi • Connect the audio level meter to AUDIO OUT. • Perform the self-recording/play back(measurement) with a S-VHS blank tape.	CH-1 : AUDIO OUT CH-1/L (terminated with 47 kΩ) CH-2 : AUDIO OUT CH-2/R (terminated with 47 kΩ) −10.0±0.5 dBu Note: • When the specification is not satisfied, perform the adjustment described in Step 2. • Calculate the difference between the specification (−10.0 dBu) and the measured value in measurement for CH-1 and CH-2. Correction value=Specification value−Measured value	

Step 2.

Machine condition for adjustment	Specifications	Adjustments
• CH-1, 2 AUDIO IN : 400 Hz, −10 dBu • AUDIO switch: Hi-Fi • Insert a S-VHS blank tape. • STOP (E-E) mode • Connect the audio level meter to test point (TP).	CH-1 : TP8/AU-161 (B-1/A-1) CH-2 : TP12/AU-161 (B-2) • Check the measured value at test point. Specification value=Measured value−1/2×correction value • Make the output value coincide with specification value (Step 2). • Perform the adjustment described in Step 1 again. Example) Step 1 Specification −10.0 dBu Measured value −11.0 dBu Correction value =−10.0 dBu− (−11.0 dBu) = 1.0 dBu Step 2 Measured value −19 dBu Specification value =−19 dBu−1/2×1.0 dBu =−19.5 dBu	⊘CH-1 : RV5/AU-161 (C-1) ⊘CH-2 : RV9/AU-161 (B-2)

9-8. LAU E-E LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• CH-1, 2 AUDIO IN : 1 kHz, −10 dBu • AUDIO switch: NORMAL • Connect the audio level meter to AUDIO OUT. • Insert a S-VHS blank tape. • STOP (E-E) mode	CH-1: AUDIO OUT CH-1/L (terminated with 47 kΩ) CH-2: AUDIO OUT CH-2/R (terminated with 47 kΩ) −10.0±0.5 dBu	⊘CH-1: RV203/AU-161 (I-3/I-2) ⊘CH-2: RV303/AU-161 (G-3)

9-9. LAU PB LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• AUDIO switch: NORMAL • Connect the audio level meter to AUDIO OUT. • Play back the Normal audio 400 Hz portion of the alignment tape KRV-45NS or KRV-35NF.	CH-1: AUDIO OUT CH-1/L (terminated with 47 kΩ) CH-2: AUDIO OUT CH-2/R (terminated with 47 kΩ) −10.0±0.5 dBu	⊘CH-1: RV202/AU-161(I-3/J-3) ⊘CH-2: RV302/AU-161(H-3/G-3)

9-10. LAU PB FREQUENCY RESPONSE ADJUSTMENT

<table>
<tr><th>Machine condition for adjustment</th><th>Specifications</th><th>Adjustments</th></tr>
<tr><td>• AUDIO switch: NORMAL
• Connect the audio level meter to AUDIO OUT.
• Play back the Normal audio 400 Hz and 7 kHz portion of the alignment tape KRV-45NS or KRV-35NF.</td><td>CH-1: AUDIO OUT CH-1/L (terminated with 47 kΩ)
CH-2: AUDIO OUT CH-2/R (terminated with 47 kΩ)
<table>
<tr><th>Frequency</th><th>Level</th></tr>
<tr><td>400 Hz</td><td>Reference</td></tr>
<tr><td>7 kHz</td><td>Reference±0.5 dB</td></tr>
</table></td><td>⊘CH-1: RV201/AU-161(J-3/I-3)
⊘CH-2: RV301/AU-161 (H-3)</td></tr>
</table>

9-11. LAU REC LEVEL ADJUSTMENT

Step 1.

Machine condition for adjustment	Specifications	Adjustments
• CH-1, 2 AUDIO IN : 1 kHz, −10 dBu • AUDIO switch: NORMAL • Connect the audio level meter to AUDIO OUT. • Perform the self-recording/playback (measurement) with a S-VHS blank tape.	CH-1 : AUDIO OUT CH-1/L (terminated with 47 kΩ) CH-2 : AUDIO OUT CH-2/R (terminated with 47 kΩ) −10.0±0.3 dBu Note: • When the specification is not satisfied, perform the adjustment described in Step 2. • Calculate the difference between the specification (−10.0 dBu) and the measured value in measurement for CH-1 and CH-2. Correction value=Specification value−Measured value	

Step 2.

Machine condition for adjustment	Specifications	Adjustments
• CH-1, 2 AUDIO IN : 1 kHz, −10 dBu • AUDIO switch: NORMAL • Insert a S-VHS blank tape • STOP (E-E) mode • Connect the audio level meter to test point (TP).	CH-1 : TP206/AU-161 (J-2/I-2) CH-2 : TP306/AU-161 (H-2) • Check the measured value at test point. Specification value=Measured value−Correction value • Set the above specification value to output level and perform the adjustment described in Step 1 again. Example) Step 1 Specification −10.0 dBu Measured value −11.0 dBu Correction value = −10.0 dBu− (−11.0 dBu) =1.0 dBu Step 2 Measured value −19 dBu Specification value = −19 dBu−1.0 dBu = −20 dBu	⊘CH-1:RV204/AU-161 (J-2/J-1) ⊘CH-2:RV304/AU-161 (H-2/G-2)

9-12. LAU OVERALL FREQUENCY RESPONSE ADJUSTMENT

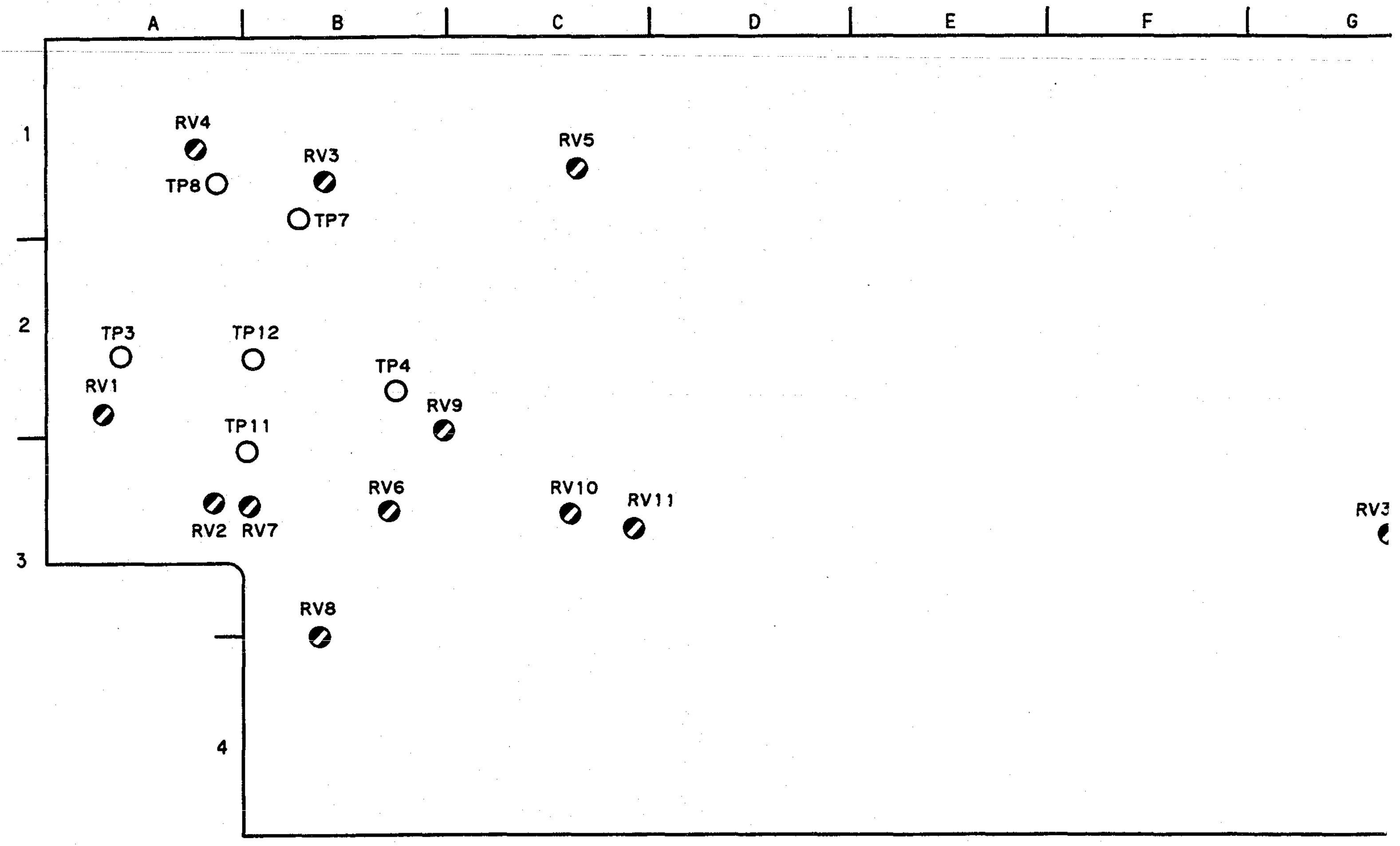
Step 1.

<table>
<tr><th>Machine condition for adjustment</th><th>Specifications</th><th>Adjustments</th></tr>
<tr><td>• CH-1, 2 AUDIO IN
: 1 kHz, 7 kHz, −30 dBu
• AUDIO switch: NORMAL
• Connect the audio level meter to AUDIO OUT.
• Perform the self-recording/play back (measurement) with a S-VHS blank tape.</td><td>CH-1 : AUDIO OUT CH-1/L (terminated with 47 kΩ)
CH-2 : AUDIO OUT CH-2/R (terminated with 47 kΩ)<table><tr><th>Frequency</th><th>Level</th></tr><tr><td>1 kHz</td><td>Reference</td></tr><tr><td>7 kHz</td><td>Reference±2 dB</td></tr></table>Note:
If the specification is not satisfied, check the measurement value, perform the adjustment of the Step 2.</td><td></td></tr>
</table>

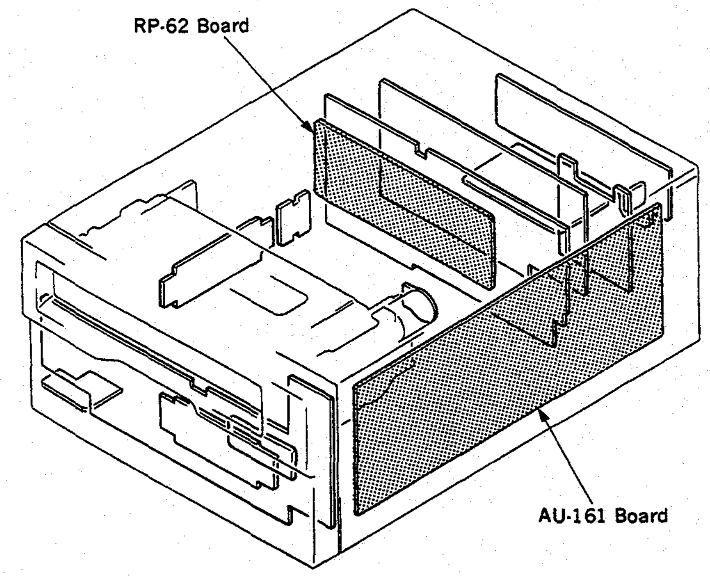
Step 2.

Machine condition for adjustment	Specifications	Adjustments
• CH-1, 2 AUDIO IN : 1 kHz, −10 dBu • AUDIO switch: NORMAL • Connect the audio level meter to test point (TP). • Insert a S-VHS blank tape. • REC mode	CH-1 : TP201/AU-161 (K-3/K-2) GND: TP202/AU-161 (J-3/J-2) CH-2 : TP301/AU-161 (H-3) GND: TP302/AU-161 (H-2) • With measured value (7 kHz) is higher than reference value (1 kHz): Increase the level of TP201 (CH-1) or TP301 (CH-2). • With measured value (7 kHz) is lower than reference value (1 kHz): Decrease the level of TP201 (CH-1) or TP301 (CH-2). Repeat Step 1 and Step 2 until she specification of Step 1 is satisfied.	⊘CH-1:RV205/AU-161 (K-2/K-3) ⊘CH-2:RV305/AU-161 (L-2/I-3)

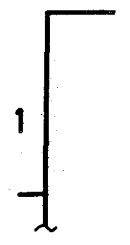
Location of RVs and TPs on AU-161 board. (B side)
SVO-9500MD (S/N 20001 and higher) or SVO-9500MD4 (S/N 10001 and higher)

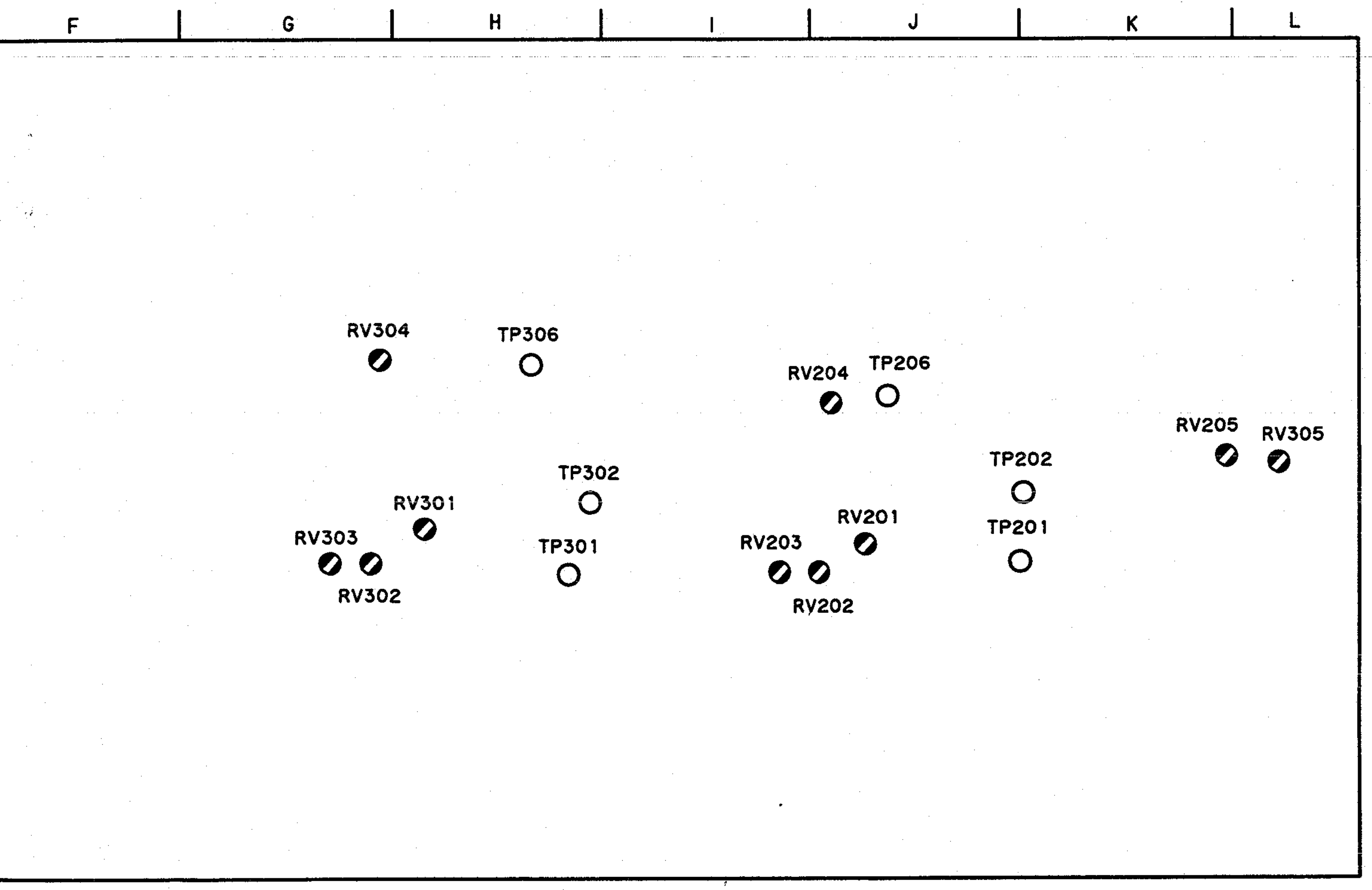


Location of AU-161 board and RP-62 board.

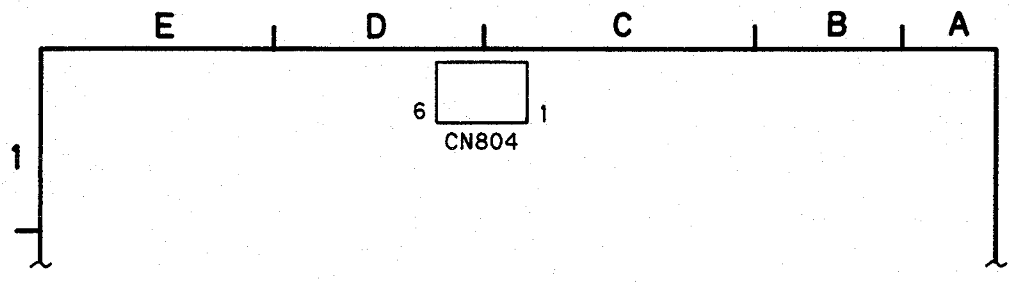


Location of



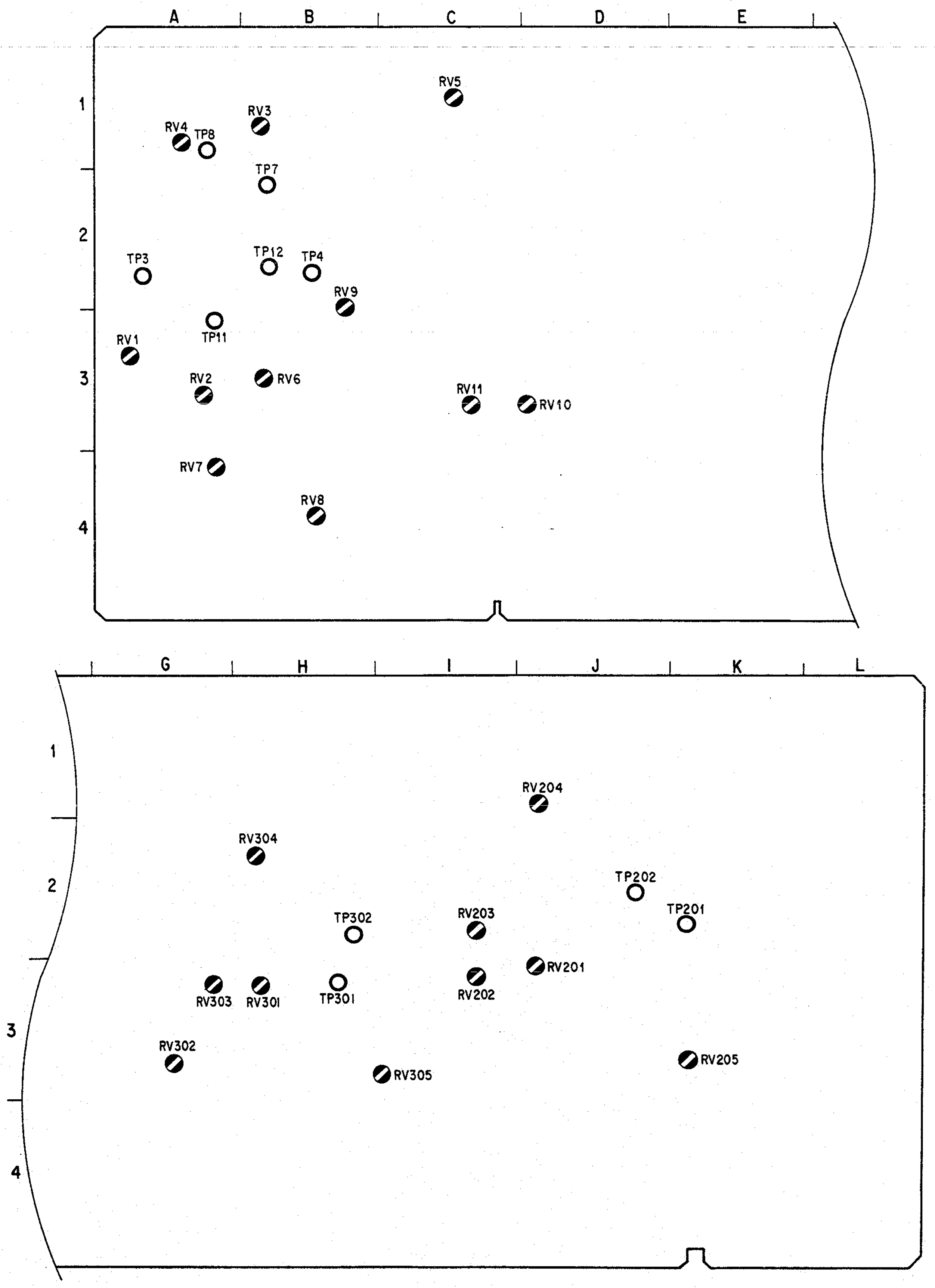

F
G
H
I
J
K
L
RV304
TP306
RV204
TP206
RV205
RV305
TP302
TP202
RV301
RV201
RV303
TP301
RV203
TP201
RV302
RV202

Location of CN804 on RP-62 board. (A side)


E
D
C
B
A
1
6
1
CN804

Location of RVs and TPs on AU-161 board. (B side)

SVO-9500MD (S/N 10001 to 11620)


A
B
C
D
E
1
2
3
4
RV5
RV3
RV4
TP8
TP7
TP3
TP12
TP4
RV9
TP11
RV1
RV2
RV6
RV11
RV10
RV7
RV8
G
H
I
J
K
L
1
2
3
4
RV204
RV304
TP202
RV203
TP201
TP302
RV201
RV303
RV301
TP301
RV202
RV302
RV305
RV205

SECTION 10
VIDEO SYSTEM ALIGNMENT

[Equipment Required]

- Oscilloscope
- Frequency counter
- Digital voltmeter
- Multiformat signal generator (with S-VIDEO OUT)
- Waveform monitor/Vector scope
- Y/C delay adjustment tool
- Video cable with S connector
- RP extension tool (Refer to page 10-19.)
- Blank tape (Normal-VHS)
- Blank tape (Super-VHS)
- Alignment tapes

Alignment Tape Name (Part No.)	REC Mode	Contents	
		Video Area	Audio Area
KRV-45NS (Normal-VHS) (Part No. : pending)	SP	• Color bars 170 min	• Normal audio 170 min 7 kHz 15 seconds, 400 Hz 15 seconds (alternately) • Hi-Fi audio 170 min 400 Hz (stereo)
KRV-45HNS (Super-VHS) (Part No. : pending)			
KRV-51N (Normal-VHS) (8-192-605-31) (when KRV-45NS is not available)	SP	• Color bars 5 min	• None
	EP	• Color bars 5 min	• None
KRV-51HN (Super-VHS) (8-192-605-21) (when KRV-45HNS is not available)	SP	• Color bars 5 min	• None
	EP	• Color bars 5 min	• None

[Setting of switch &c.]

REAR PANEL

- 75 Ω termination switches
  for VIDEO IN (S type and BNC type) ············75 Ω ON

FRONT PANEL

- CTL/MENU switch ······································CTL
- PROGRAM switch ······································OFF
- TRACKING control VR ································FIXED (center click)

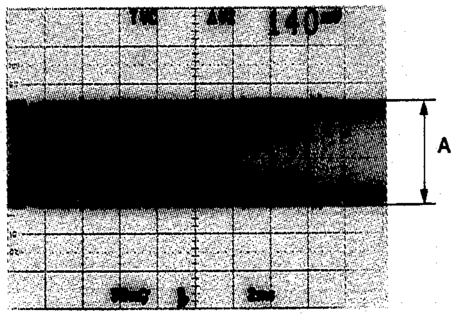
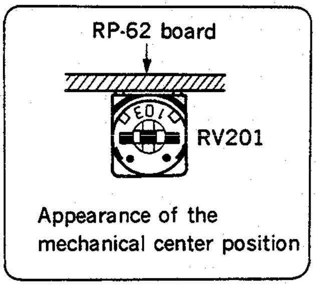
[Setting of menu]

- S-VHS recording selection·······························SvH-At
- Digital CNR ··Cnr-On
- Digital YNR ··Ynr-On
- Digital Y enhancer ······································YEn-On

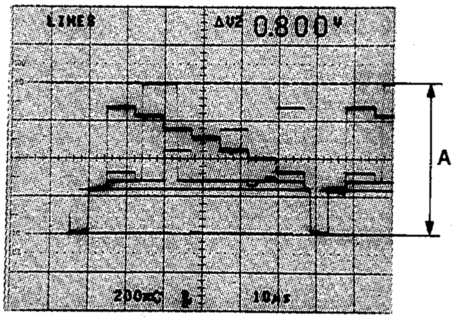
[Note]

- Refer to section 1-8 Menu Operations on page 1-28 for the menu setting.

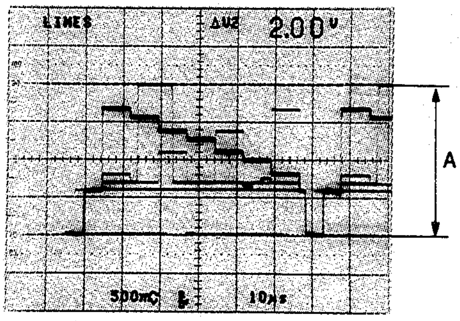
10-1. S-VHS Y RF LEVEL CHECK

Machine condition for adjustment	Specifications	Adjustments
• Connect the oscilloscope to connector pins. (When using RP extension tool, connect the oscilloscope to TP terminals of VIDEO PB S-VHS RF and SW'ING PULSE.) • Play back the color bars signal portion of the alignment tape KRV-45HNS or KRV-51HN (SP). • Turn the RV201/RP-62 (B-1) to the mechanical center position. (Refer to the left illustration.)	CN804-2/RP-62 (C-1) (RP extension tool: VIDEO PB S-VHS RF terminal)  A=50 to 200 mV p-p	⊘RV201/RP-62 (B-1)  Appearance of the mechanical center position Trigger: CN804-5/RP-62 (C-1) (RP extension tool: SW'ING PULSE terminal)

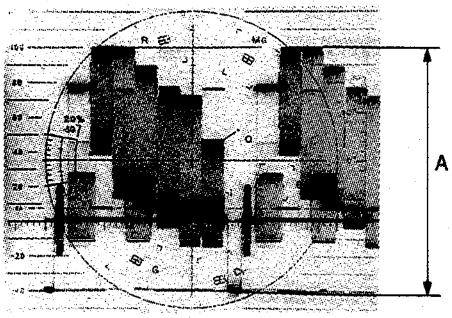
10-2. Y AGC LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN : SMPTE color bars signal • Insert a S-VHS blank tape. • STOP (E-E) mode • Connect the oscilloscope to test points (TPs).	TP303/VO-37 (D-4)  A=0.80±0.05 V p-p	⊘RV101/VO-37 (K-4) Trigger : TP301/VO-37 (C-5)

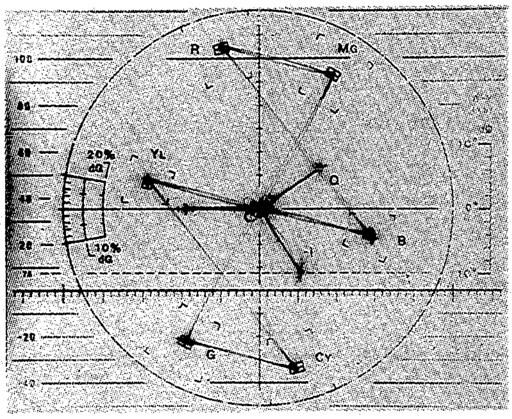
10-3. S VIDEO OUT Y OUT LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN : SMPTE color bars signal • Insert a S-VHS blank tape. • STOP (E-E) mode • Connect the oscilloscope to test points (TPs).	TP492/VO-37 (G-1)  A=2.0±0.1 V p-p	⊘RV482/VO-37 (G-2) Trigger : TP301/VO-37 (C-5)

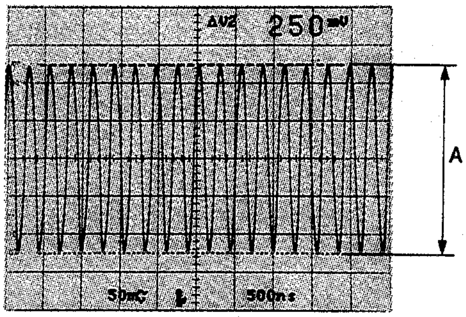
10-4. VIDEO OUT MIX Y LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN : SMPTE color bars signal • Insert a S-VHS blank tape. • STOP (E-E) mode Waveform monitor/Vector scope • WAVEFORM	VIDEO OUT connector (terminated with 75 Ω)  A=1.00±0.05 V p-p (140±7 IRE)	⊘RV480/VO-37 (G-4)

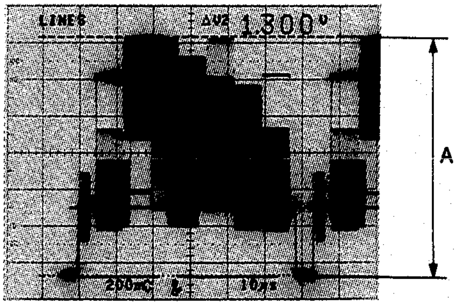
10-5. VIDEO OUT MIX CHROMA LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN : SMPTE color bars signal • Insert a S-VHS blank tape. • STOP (E-E) mode Waveform monitor/Vector scope • VECTOR	VIDEO OUT connector (terminated with 75 Ω)  • The luminous spot of burst shall be at 75% position on mark. • One and more luminous spots shall within the frame of each ⊞ mark.	⊘RV481/VO-37 (G-3)

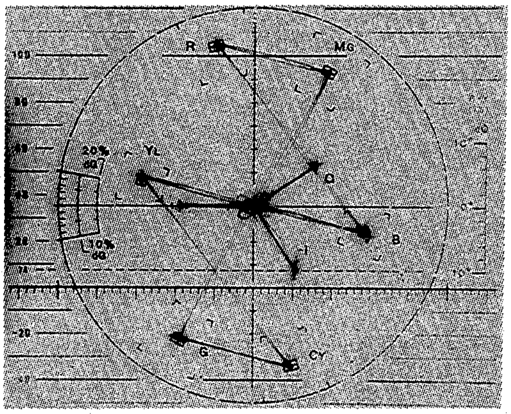
10-6. PB FSC ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• Connect the frequency counter through the oscilloscope to test point (TP). • Play back the color bars signal portion of the alignment tape KRV-45NS or KRV-51N (SP).	TP501/CR-38 (E-3)  3.579545±0.000005 MHz (A≧150 mV p-p)	⊘CV500/CR-38 (D-3) Trigger : INT

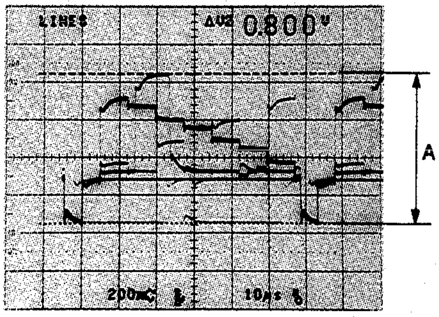
10-7. COMPOSITE IN Y LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN : no connection • VIDEO IN : SMPTE color bars signal • Insert a S-VHS blank tape. • STOP (E-E) mode • Connect the oscilloscope to test points (TPs).	TP302/VO-37 (A-5)  A=1.30±0.05 V p-p	⊘RV310/VO-37 (B-1) Trigger : TP301/VO-37 (C-5)

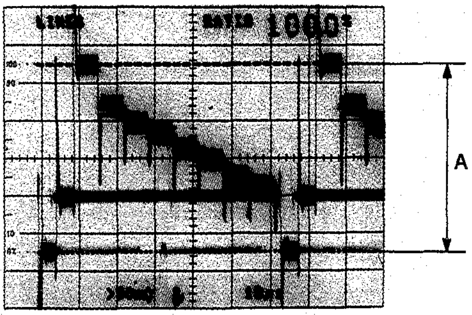
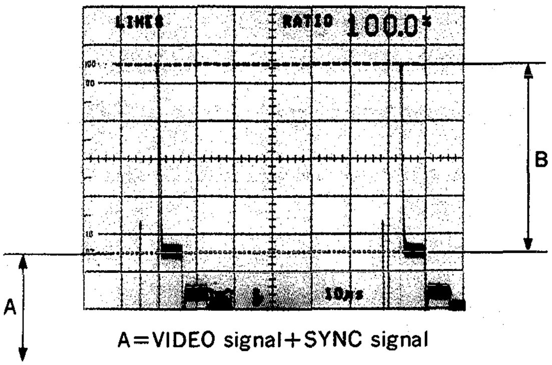
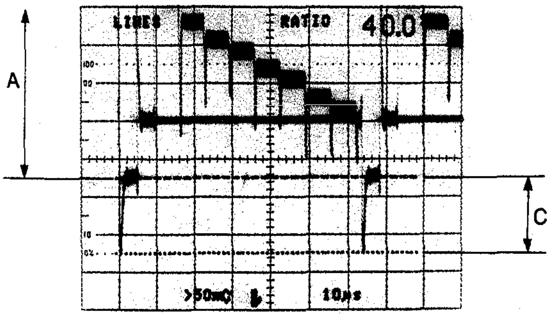
10-8. COMPOSITE IN CHROMA LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN: no connection • VIDEO IN : SMPTE color bars signal • Insert a S-VHS blank tape. • STOP (E-E) mode • Connect the oscilloscope to test points (TPs). Waveform monitor/Vector scope • VECTOR	VIDEO OUT connector (terminated with 75 Ω)  • The luminous spot of burst shall be at 75% position on mark. • One and more luminous spots shall within the frame of each ⊞ mark.	●RV311/VO-37 (B-1)

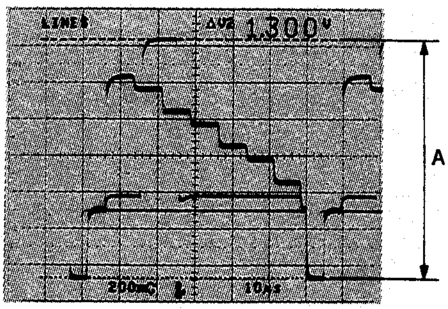
10-9. S-VHS Y LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN : SMPTE color bars signal • Insert a S-VHS blank tape. • STOP (E-E) mode • Connect the oscilloscope to test points (TPs).	TP201/VO-37 (E-5)  A=0.80±0.04 V p-p	●RV202/VO-37 (E-5) Trigger: TP301/VO-37 (C-5)

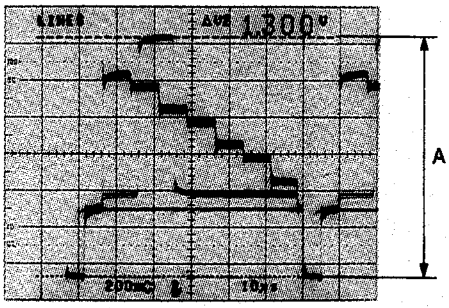
10-10. N-VHS WHITE/DARK CLIP ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN: no connection • VIDEO IN: 75% color bars signal (WHITE 100%, AMPL 75%) • Insert a N-VHS blank tape. • STOP (E-E) mode • Connect the oscilloscope to test points (TPs).	TP101/VO-37 (K-3)   A=VIDEO signal+SYNC signal (A is reference level.) $\frac{B}{A}=100^{+0}_{-4}\%$	⊘RV104/VO-37 (K-2) Trigger : TP301/VO-37 (C-5)
	TP101/VO-37 (K-3)  A=VIDEO signal+SYNC signal (A is reference level.) $\frac{C}{A}=40\pm2\%$	⊘RV108/VO-37 (K-2) Trigger : TP301/VO-37 (C-5)

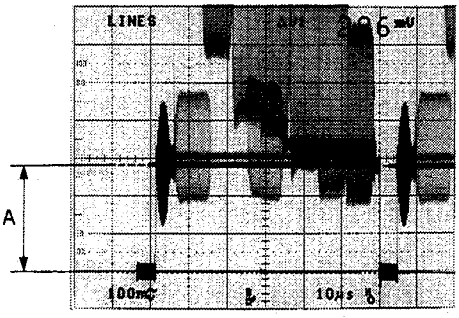
10-11. N-VHS PB DEMOD Y LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• Connect the oscilloscope to test points (TPs). • Play back the color bars signal portion of the alignment tape KRV-45NS or KRV-51N (SP).	TP302/VO-37 (A-5)  A=1.25±0.05 V p-p	⊘RV106/VO-37 (J-2) Trigger : TP301/VO-37 (C-5)

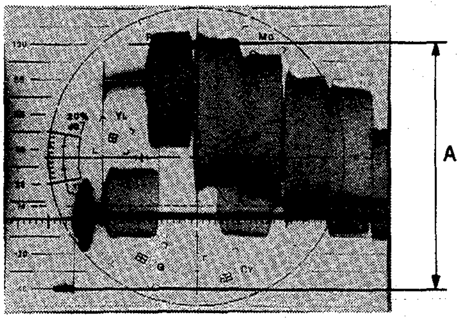
10-12. S-VHS PB DEMOD Y LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• Connect the oscilloscope to test points (TPs). • Play back the color bars signal portion of the alignment tape KRV-45HNS or KRV-51HN (SP).	TP302/VO-37 (B-5)  A=1.30±0.05 V p-p	⊘RV105/VO-37 (H-1) Trigger : TP301/VO-37 (C-5)

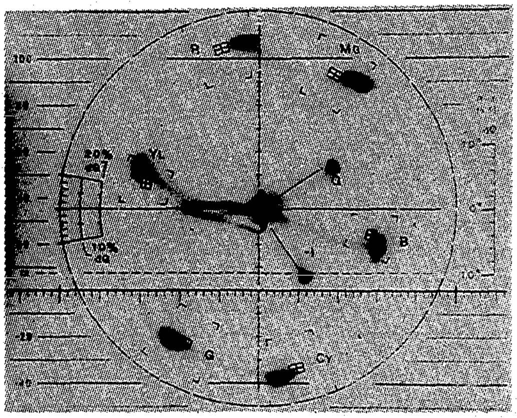
10-13. CNR OUT Y LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• Connect the oscilloscope to VIDEO OUT connector. • Play back the color bars signal portion of the alignment tape KRV-45HNS or KRV-51HN (SP).	VIDEO OUT connector (terminated with 75 Ω)  A=286±10 mV	⊘RV402/VO-37 (E-2)

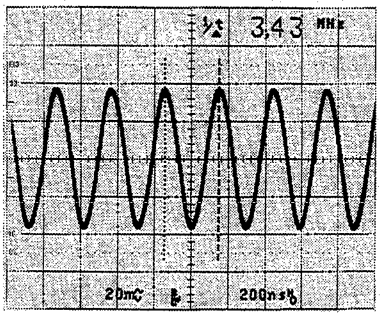
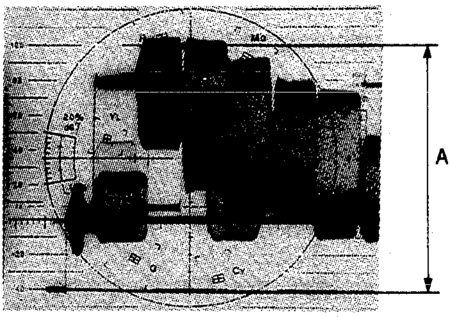
10-14. CNR IN Y LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• Play back the color bars signal portion of the alignment tape KRV-45HNS or KRV-51HN (SP). Waveform monitor/Vector scope • WAVEFORM	VIDEO OUT connector (terminated with 75 Ω)  A=1.00±0.02 V p-p (A=140±3 IRE)	⊘RV30/VO-37 (D-2)

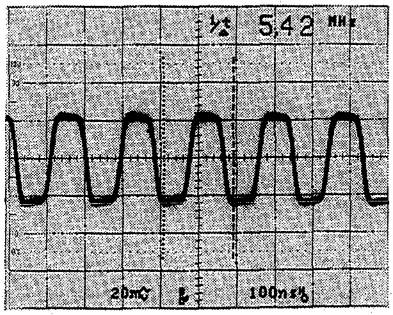
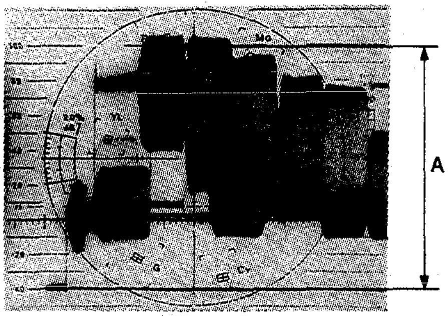
10-15. CNR OUT CHROMA LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• Play back the color bars signal portion of the alignment tape KRV-45HNS or KRV-51HN (SP). Waveform monitor/Vector scope • VECTOR	VIDEO OUT connector (terminated with 75 Ω)  The luminous spot of burst shall be at 75% position on mark.	⊘RV401/VO-37 (E-4)

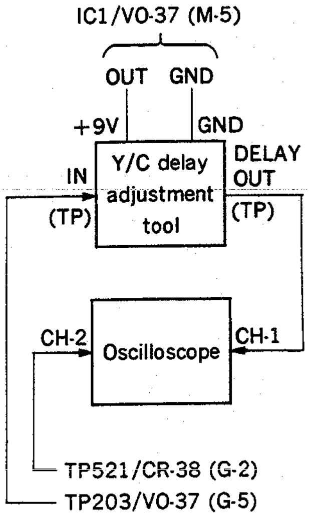
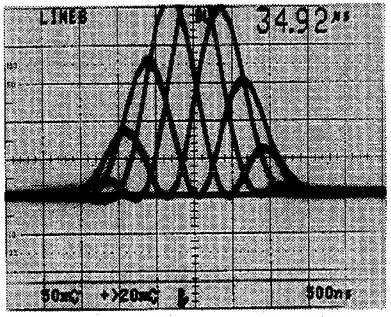
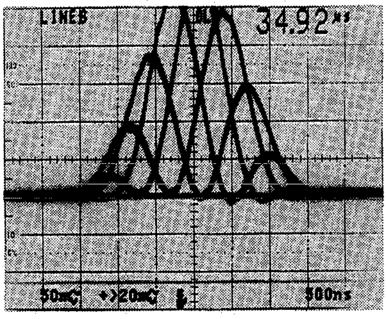
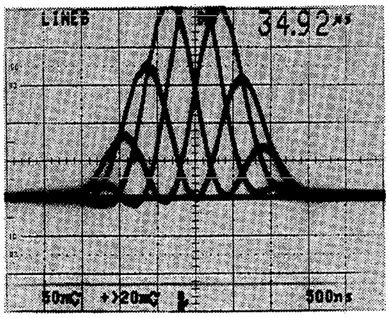
10-16. N-VHS SYNC CHIP CARRIER SET/DEVIATION ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN : no connection • VIDEO IN : no signal • Insert a N-VHS blank tape. • STOP (E-E) mode • Connect the frequency counter through the oscilloscope to test point (TP).	Sync chip carrier set adjustment TP202/VO-37 (L-1)  3.43±0.05 MHz	⊘RV109/VO-37 (K-2)
• S-VIDEO IN : no connection • VIDEO IN : SMPTE color bars signal • Perform the self-recording/play back (measurement) with a N-VHS blank tape. Waveform monitor/Vector scope • WAVEFORM	Deviation adjunstment VIDEO OUT connector (terminated with 75 Ω)  A=1.00±0.05 V p-p (140±7 IRE) • With measured value is higher than specification value: Turn only a few RV102 to counterclockwise. • With measured value is lower than specification value: Turn only a few RV102 to clockwise. Repeat the self-recording/play back (measurement) and RV102 adjustment until the specification is satisfied.	⊘RV102/VO-37 (K-3)

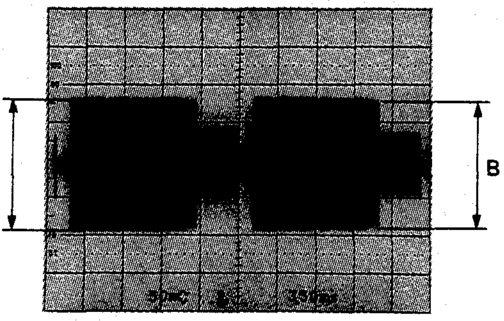
10-17. S-VHS SYNC CHIP CARRIER SET/DEVIATION ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN : no signal • Insert a S-VHS blank tape. • STOP (E-E) mode • Connect the frequency counter through the oscilloscope to test point (TP).	Sync chip carrier set adjustment TP202/VO-37 (L-1)  5.42±0.05 MHz	●RV107/VO-37 (K-1)
• S-VIDEO IN : SMPTE color bars signal • Perform the self-recording/play back (measurement) with a S-VHS blank tape. Waveform monitor/Vector scope • WAVEFORM	Deviation adjustment VIDEO OUT connector (terminated with 75 Ω)  A=1.00±0.05 V p-p (140±7 IRE) • With measured value is higher than specification value: Turn only a few RV103 to counterclockwise. • With measured value is lower than specification value: Turn only a few RV103 to clockwise. Repeat the self-recording/play back (measurement) and RV103 adjustment until the specification is satisfied.	●RV103/VO-37 (K-3)

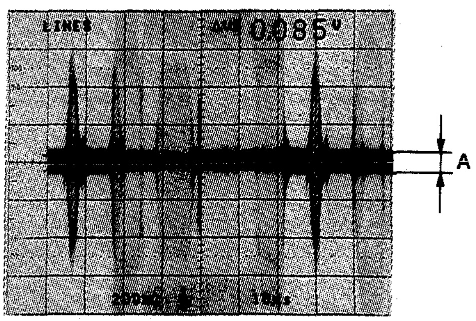
10-18. REC Y/C DELAY ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
- S-VIDEO IN : pulse & bar signal - Insert a S-VHS blank tape. - STOP (E-E) mode - Connect the oscilloscope to test points (TPs) as follows.  IC1/VO-37 (M-5) OUT GND +9V GND Y/C delay adjustment tool IN (TP) DELAY OUT (TP) CH-2 Oscilloscope CH-1 TP521/CR-38 (G-2) TP203/VO-37 (G-5) Oscilloscope - ADD - CH-2 : VAR	CH-1 : TP203/VO-37 (G-5) (through the Y/C delay adjustment tool) CH-2 : TP521/CR-38 (G-2) OK  LINE8 34.92 50mV 20mV 500ns NG  LINE8 34.92 50mV 20mV 500ns NG  LINE8 34.92 50mV 20mV 500ns Flatten the bottom side portion (envelope) of modulation pulse part. [If the specification can not be satisfied, short the short land SL1/CR-38 (G-2), SL2/CR-38 (G-2), or SL3/CR-38 (G-2), and readjust using CV510/CR-38 (F-2) so that specication is satisfied. (SL No. value becomes large, chroma signal delays behind for the Y signal.)]	⊘CV510/CR-38 (F-2)

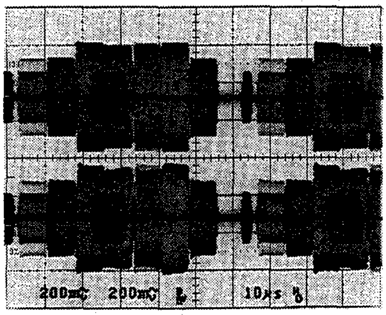
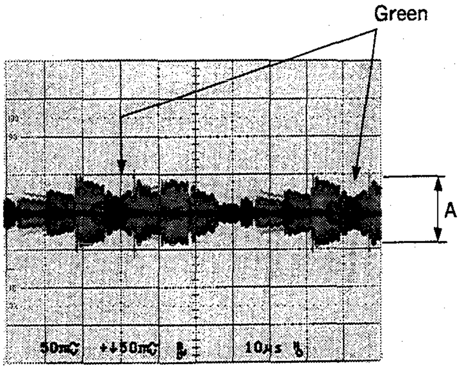
10-19. PB CHROMA RF LEVEL BALANCE ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• Connect the oscilloscope to test point (TP) and connector pin. • Play back the color bars signal portion of the alignment tape KRV-45NS or KRV-51N (SP). • TRACKING control VR : Maximize the A and B level. • After the adjustment, set the TRACKING control VR to center click (FIXED).	TP560/CR-38 (E-3)  $\frac{B}{A}=100\pm5\%$ (A is reference level.)	⊘RV561/CR-38 (G-3) Trigger : CN804-5/RP-62 (C-1) (RP extension tool : SW'ING PULSE terminal)

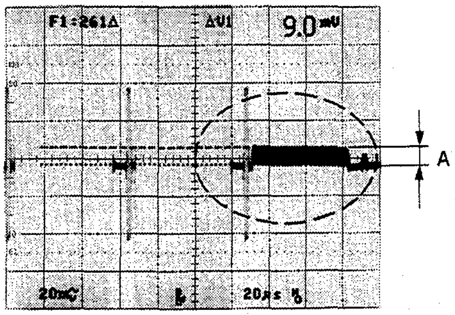
10-20. CONVERTER BALANCE ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• Connect the oscilloscope to test points (TPs). • Play back the color bars signal portion of the alignment tape KRV-45HNS or KRV-51HN (SP).	TP611/CR-38 (B-3)  Minimize the A level. (A≦0.2 V)	⊘RV501/CR-38 (C-3) Trigger : TP302/VO-37 (A-5)

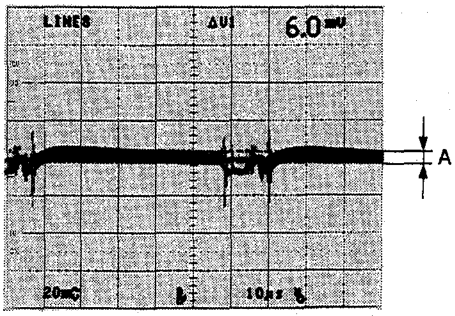
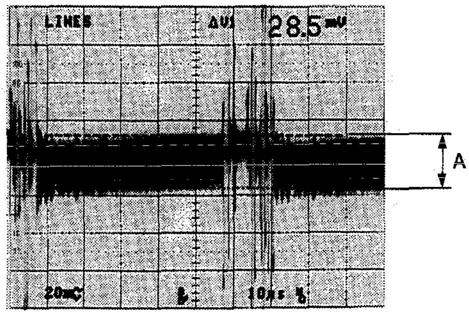
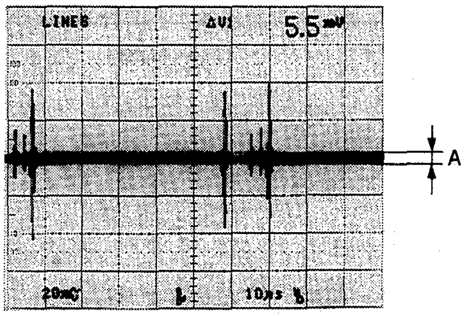
10-21. CROSSTALK CANCELLER ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN : SMPTE color bars signal • Insert a S-VHS blank tape. • STOP (E-E) mode. • Connect the oscilloscope to test points (TPs). Oscilloscope • ADD • CH-2 : INV	CH-1 : TP611/CR-38 (B-3) CH-2 : TP612/CR-38 (B-3)   Minimize the A level (A is green level)	⊘RV601/CR-38 (C-3) Trigger : TP301/VO-37 (C-5)

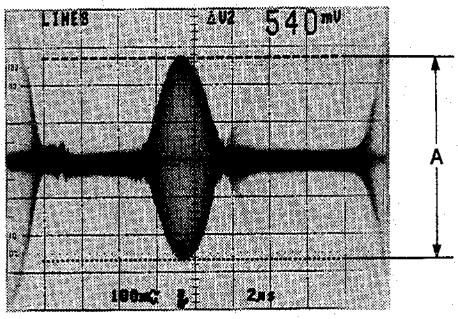
10-22. CHROMA CORRELATOR ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN : chroma noise signal • Insert a S-VHS blank tape. • STOP (E-E) mode. • Connect the oscilloscope to test points (TPs). • Select the final line of video signal on the oscilloscope.	TP660/CR-38 (A-2) or C663/CR-38 (A-2) (See below note)  Minimize the A level. (A≦20 mV) NOTE : The TP660 is nenexistence on the CR-38 board (board number 1-641-586-11) having the SVO-9500MD S/N 10001 to 11220, perform the observation at C663 (lateral through connection) instead.	⊘RV611/CR-38 (A-3) Trigger : TP301/VO-37 (C-5)

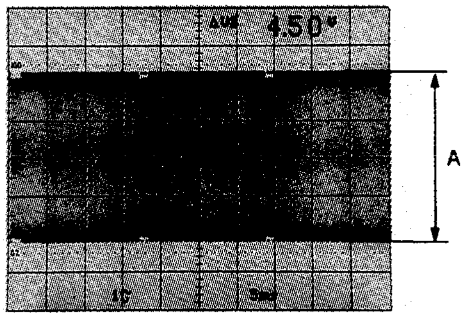
10-23. CPI ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN : chroma noise signal • Insert a S-VHS blank tape. • STOP (E-E) mode • Connect the oscilloscope to test points (TPs).	TP801/CR-38 (F-2)  Minimize the A level. (A≦10 mV)	⊘ CV801/CR-38 (D-2) ⊘ RV801/CR-38 (D-1) Adjust alternately Trigger : TP301/VO-37 (C-5)
• S-VIDEO IN : chroma noise signal • Insert a S-VHS blank tape. • STOP (E-E) mode • Connect the oscilloscope to test points (TPs).	TP820/CR-38 (C-1)  Minimize the A level. (A≦30 mV)	⊘ CV800/CR-38 (C-2) ⊘ RV800/CR-38 (C-1) Adjust alternately Trigger : TP301/VO-37 (C-5)
• S-VIDEO IN : chroma noise signal • Insert a S-VHS blank tape. • STOP (E-E) mode • Connect between TP850/CR-38 (E-1) and TP851/CR-38 (G-1) on the CR-38 board with shorting clip. • Connect the oscilloscope to test points (TPs). • After the adjustment, remove the shorting clip.	TP870/CR-38 (F-1)  Minimize the A level. (A≦10 mV)	⊘ CV802/CR-38 (E-1) ⊘ RV802/CR-38 (E-1) Adjust alternately Trigger : TP301/VO-37 (C-5)

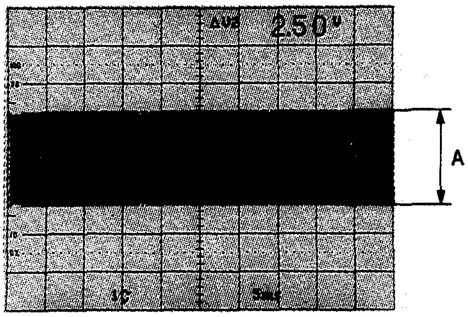
10-24. CNR IN CHROMA LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• Connect the oscilloscope to test points (TPs). • Play back the color bars signal portion of the alignment tape KRV-45HNS or KRV-51HN (SP).	TP890/CR-38 (G-2)  A=540±20 mV (A is burst level.)	⊘RV860/CR-38 (F-2) Trigger : TP301/VO-37 (C-5)

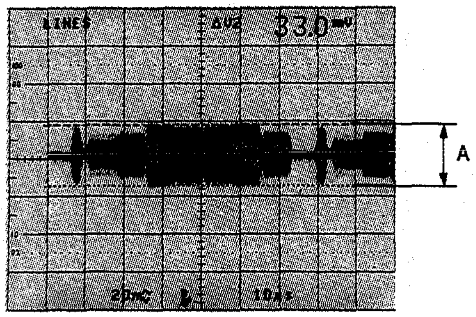
10-25. S-VHS Y REC CURRENT ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN : 50% flat field signal • Connect the oscilloscope to connector pins. (When using RP extension tool, connect the oscilloscope to TP terminals of VIDEO REC CURR. and SW'ING PULSE) • Insert a S-VHS blank tape. • REC mode	CN804-3/RP-62 (C-1) (RP extension tool: VIDEO REC CURR. terminal)  A=4.5±0.1 V p-p NOTE: The B/W button of oscilloscope to OFF.	⊘RV210/VO-37 (K-1) Trigger: CN804-5/RP-62 (C-1) (RP extension tool: SW'ING PULSE terminal)

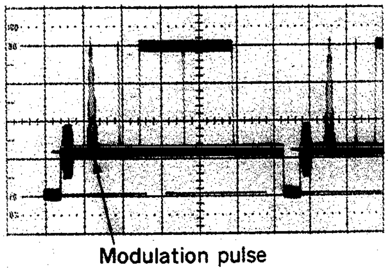
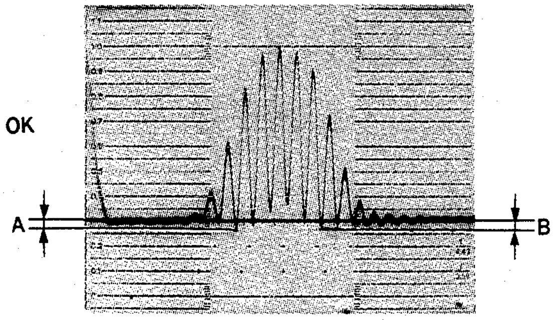
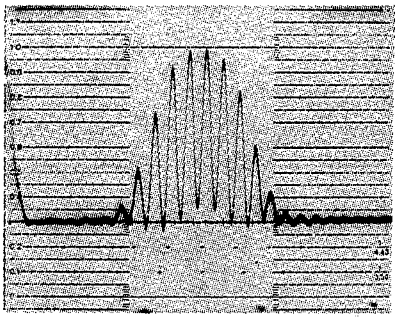
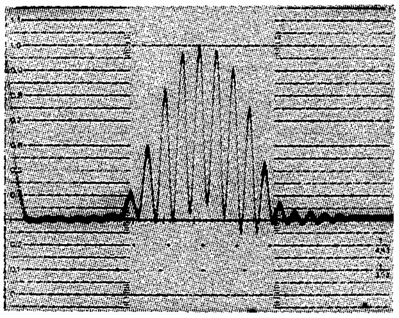
10-26. N-VHS Y REC CURRENT ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN: no connection • VIDEO IN : 50% flat field signal • Connect the oscilloscope to connector pins. (When using RP extension tool, connect the oscilloscope to TP terminals of VIDEO REC CURR. and SW'ING PULSE.) • Insert a N-VHS blank tape. • REC mode	CN804-3/RP-62 (C-1) (RP extension tool: VIDEO REC CURR. terminal)  A=2.5±0.1 V p-p NOTE: The B/W button of oscilloscope to OFF.	●RV211/VO-37 (L-1) Trigger : CN804-5/RP-62 (C-1) (RP extension tool: SW'ING PULSE terminal)

10-27. S-VHS CHROMA REC CURRENT ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN : SMPTE color bars signal • Connect the oscilloscope to test points (TPs). • Insert a S-VHS blank tape. • REC mode	TP210/VO-37 (J-1)  A=33±2 mV	●RV260/VO-37 (K-1) Trigger : TP301/VO-37 (C-5)

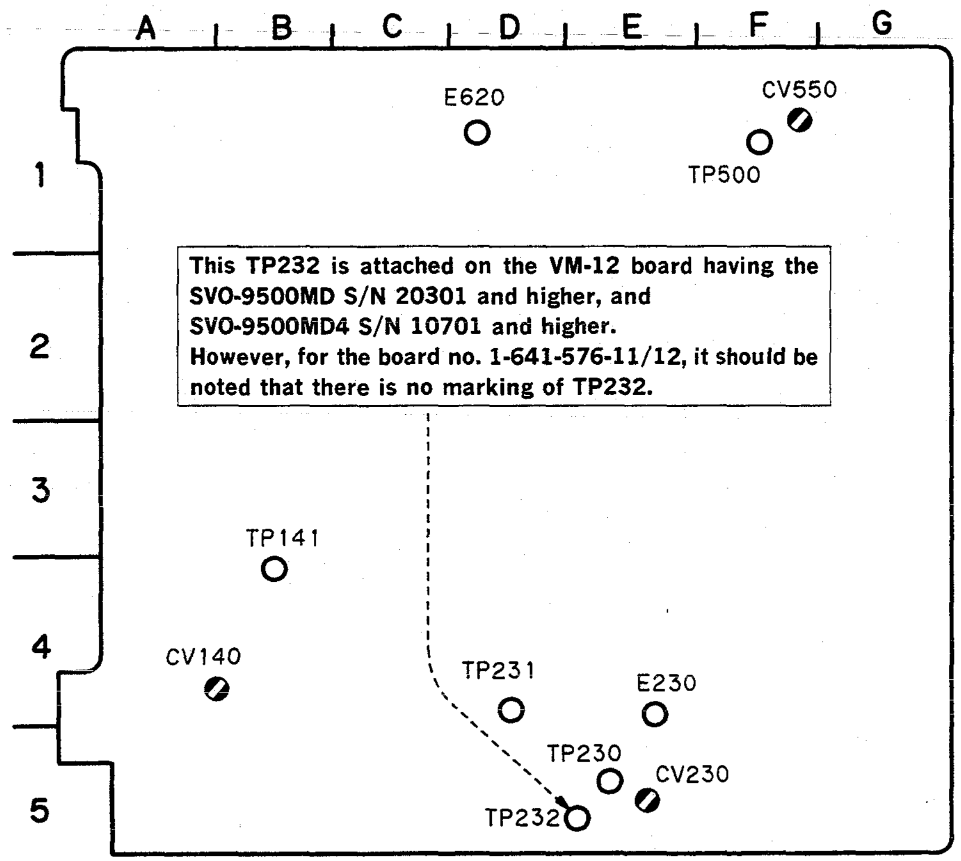
10-28. OVERALL Y/C DELAY ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN : pulse & bar signal • Perform the self-recording/play back (measurement) with a S-VHS blank tape. Waveform monitor/Vector scope • WAVEFORM • SWEEPS MAG: ON	VIDEO OUT connector (terminated with 75 Ω)  OK  A=B Repeat the self-recording/play back (measurement) and RV560 adjustment until the specification is satisfied. NG  NG 	⊘RV560/CR-38(E-3)

10-29. VM BOARD CLOCK ADJUSTMENT

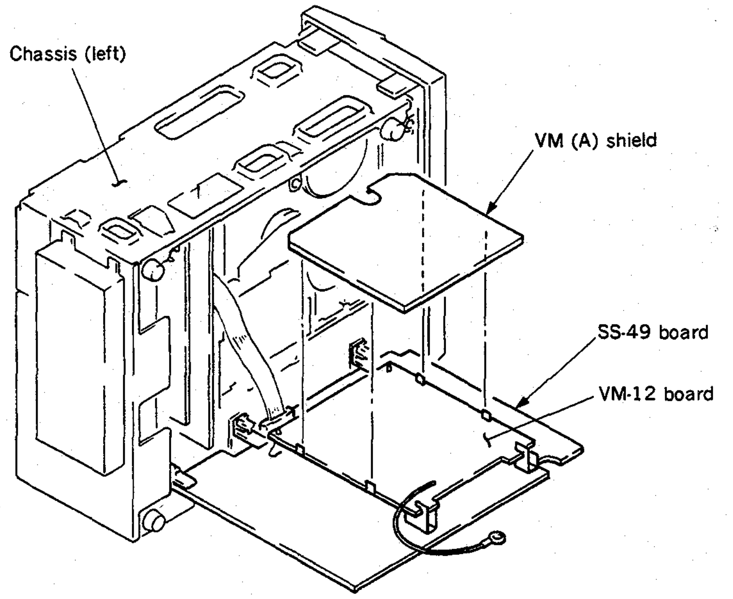
Machine condition for adjustment	Specifications	Adjustments
• S-VIDEO IN : no signal • Insert a S-VHS blank tape. • STOP (E-E) mode. • Connect the frequency counter to test points (TPs) and earth points (Es).	TP141/VM-12 (B-4) GND : E230/VM-12 (E-4) 14.31818±0.00003 MHz	⊘CV140/VM-12 (A-4) (CHROMA WRITE CLOCK)
	TP500/VM-12 (F-1) GND : E620/VM-12 (D-1) 14.31818±0.00002 MHz	⊘CV550/VM-12 (F-1) (Y READ CLOCK)
• SVO-9500MD **S/N 10001 to 11620** **S/N 20001 to 20300** **• SVO-9500MD4** **S/N 10001 to 10700** • Connect the frequency counter to test point (TP) and earth point (E).	TP231/VM-12 (D-4) GND : E230/VM-12 (E-4) 14.31818±0.05000 MHz	⊘CV230/VM-12 (E-5) (Y WRITE CLOCK)
• SVO-9500MD **S/N 20301 and higher** **• SVO-9500MD4** **S/N 10701 and higher** • Connect between TP230/VM-12 (E-4) and TP232/VM-12 (D-5) with shorting clip. • Connect the frequency counter to test point (TP) and earth point (E). • After the adjutment, remove the shorting clip.	TP231/VM-12 (D-4) GND : E230/VM-12 (E-4) 14.31818±0.05000 MHz	⊘CV230/VM-12 (E-5) (Y WRITE CLOCK)

Location of CVs, Es and TPs on VM-12 board. (A side)


A
B
C
D
E
F
G
1
2
3
4
5
E620
CV550
TP500
TP141
CV140
TP231
E230
TP230
CV230
TP232

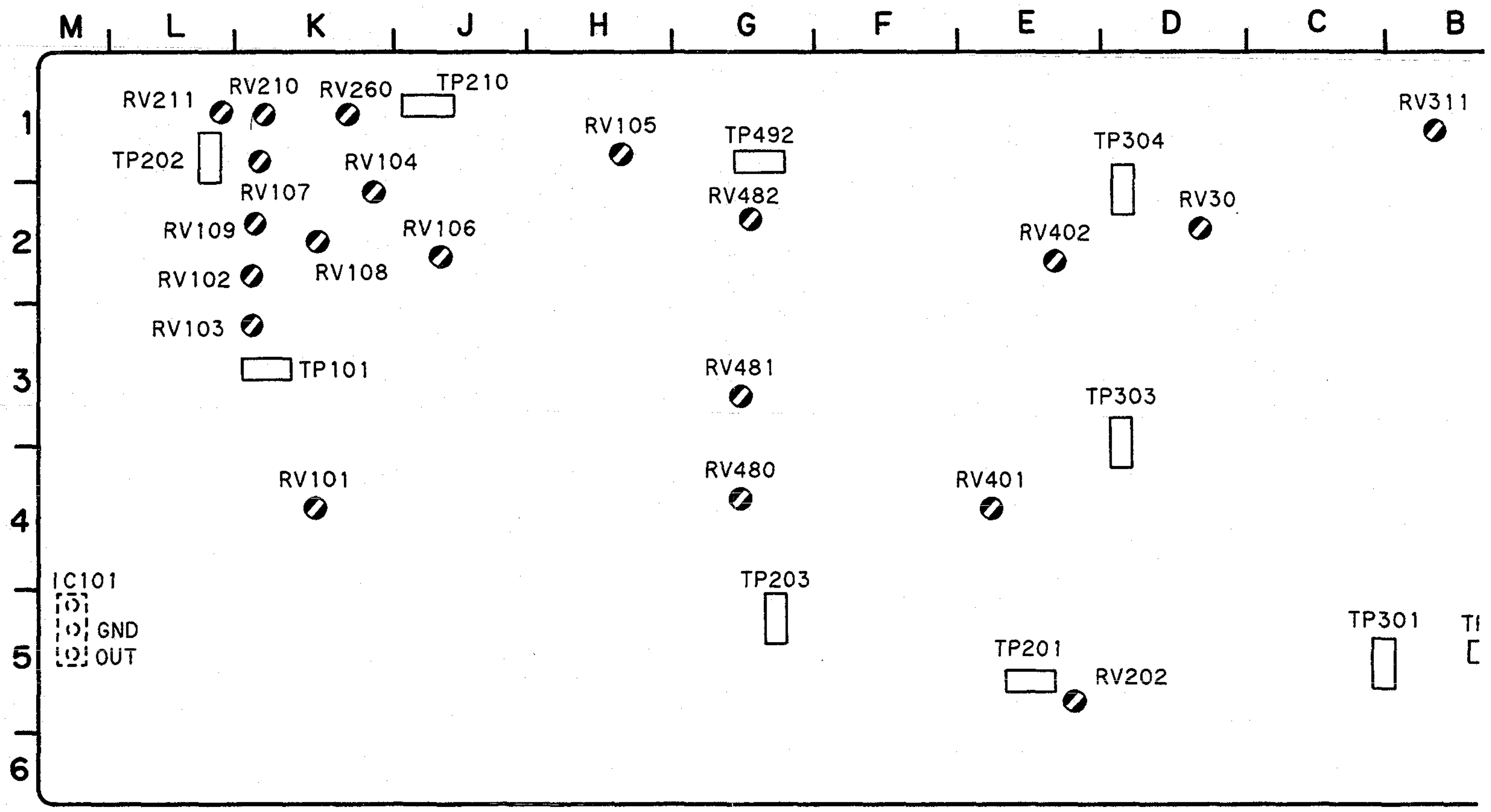
**This TP232 is attached on the VM-12 board having the SVO-9500MD S/N 20301 and higher, and SVO-9500MD4 S/N 10701 and higher.
However, for the board no. 1-641-576-11/12, it should be noted that there is no marking of TP232.**

Appearance of VTR for VM-12 board adjustment.

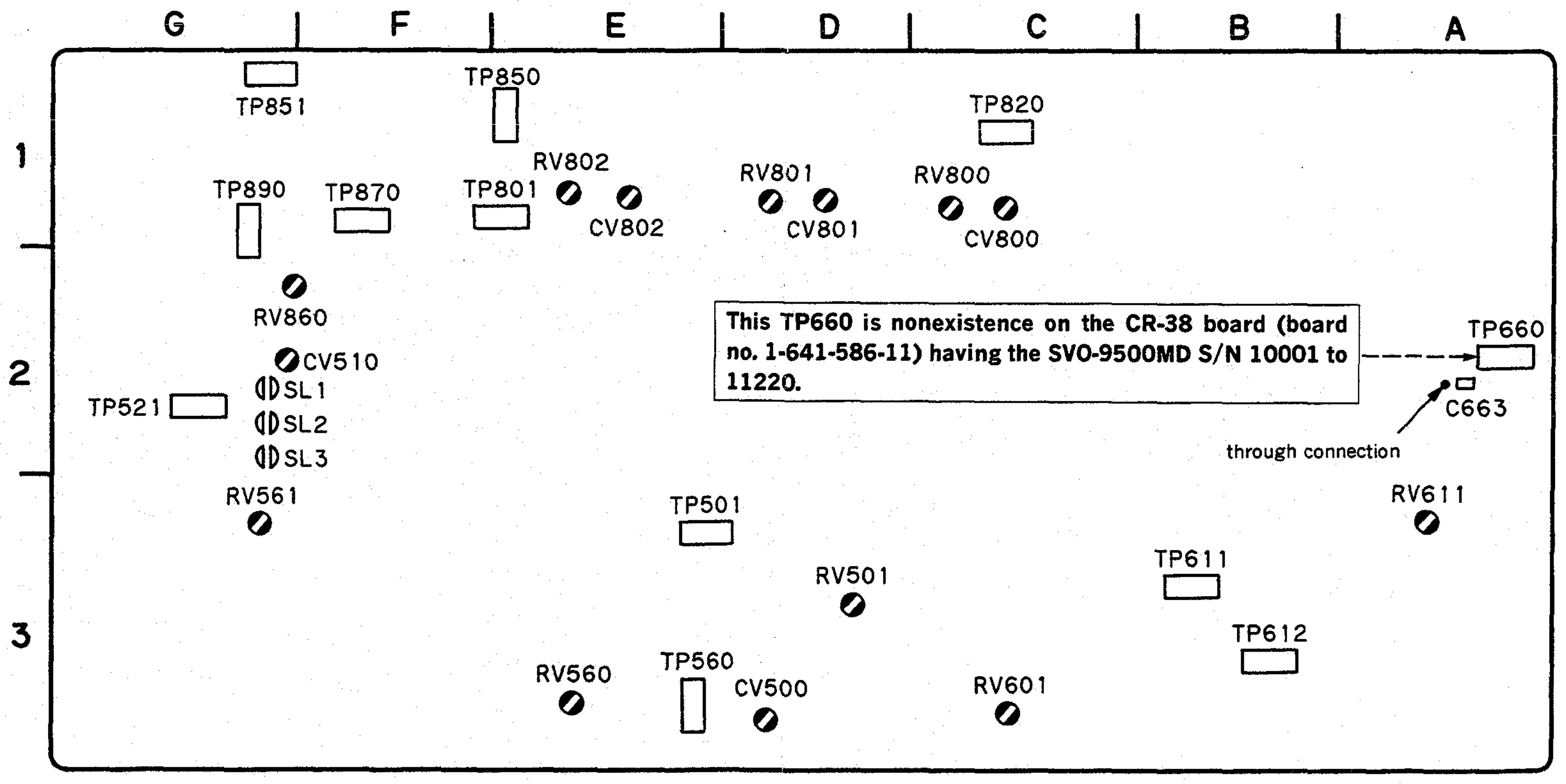

Chassis (left)
VM (A) shield
SS-49 board
VM-12 board

1. Refer to section 2-8-5 on page 2-7, open the SS-49 board.
2. Remove the VM (A) shield.

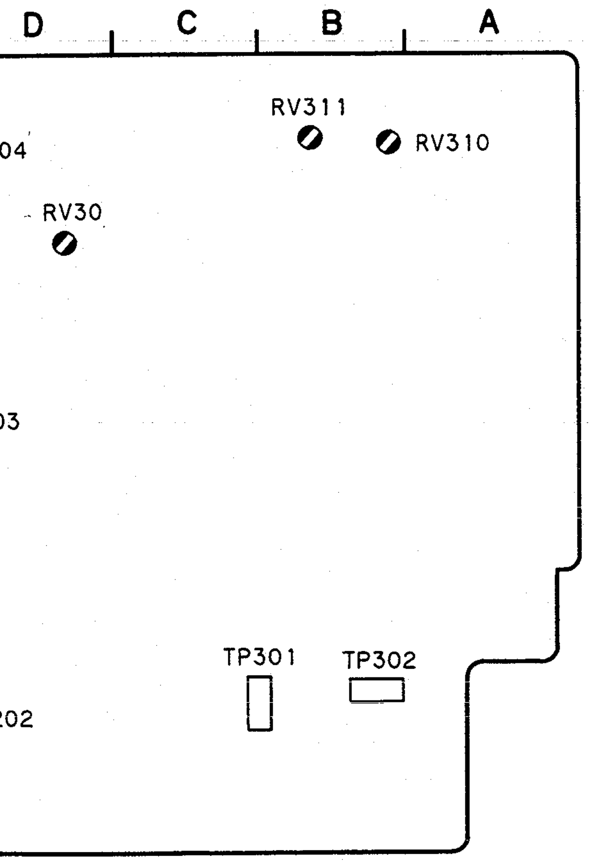
Location of IC, RVs and TPs on VO-37 board. (B side)

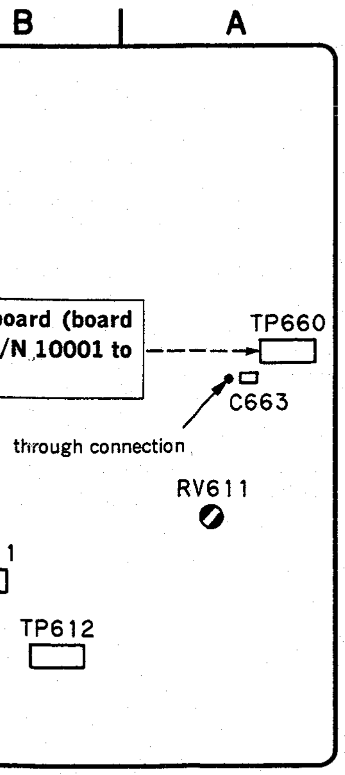

M
L
K
J
H
G
F
E
D
C
B
1
2
3
4
5
6
RV211
RV210
RV260
TP210
RV105
TP492
TP304
RV311
TP202
RV104
RV107
RV482
RV30
RV109
RV106
RV402
RV102
RV108
RV103
TP101
RV481
TP303
RV101
RV480
RV401
IC101
GND
OUT
TP203
TP201
RV202
TP301
TI

Location of C663, CVs, RVs, SLs and TPs on CR-38 board. (B side)

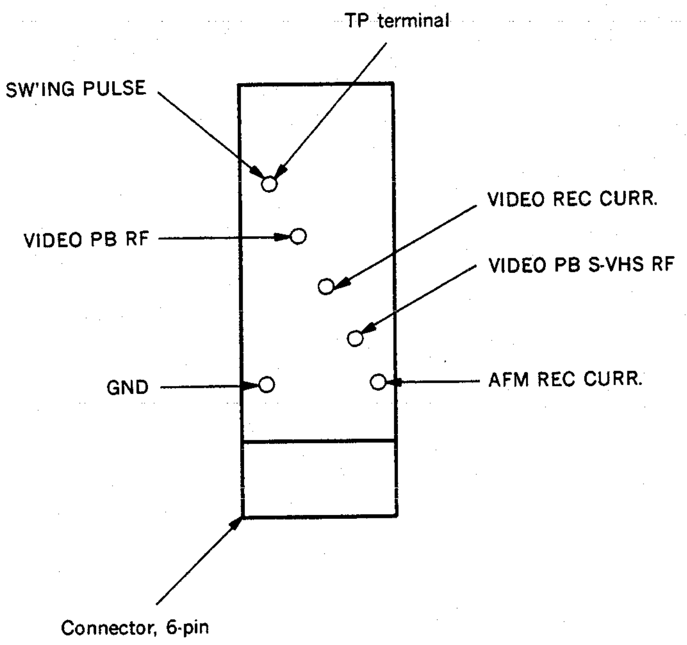

G
F
E
D
C
B
A
1
2
3
TP851
TP850
TP820
TP890
TP870
TP801
RV802
CV802
RV801
CV801
RV800
CV800
RV860
CV510
SL1
SL2
SL3
TP521
TP660
C663
through connection
RV561
TP501
RV501
TP611
RV611
TP612
RV560
TP560
CV500
RV601

This TP660 is nonexistence on the CR-38 board (board no. 1-641-586-11) having the SVO-9500MD S/N 10001 to 11220.

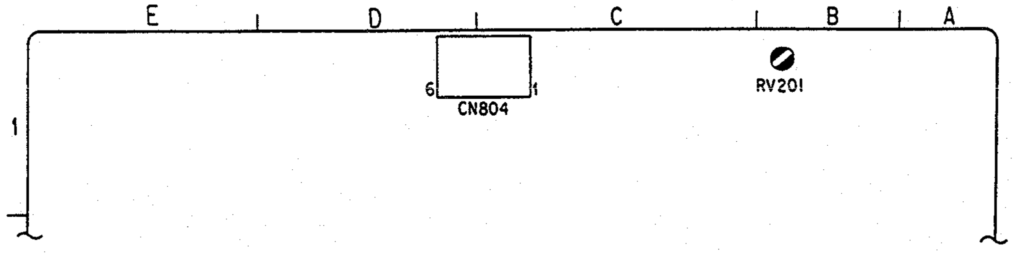

D
C
B
A
RV311
RV310
04
RV30
03
TP301
TP302
202


B
A
oard (board
/N 10001 to
TP660
C663
through connection
RV611
1
TP612

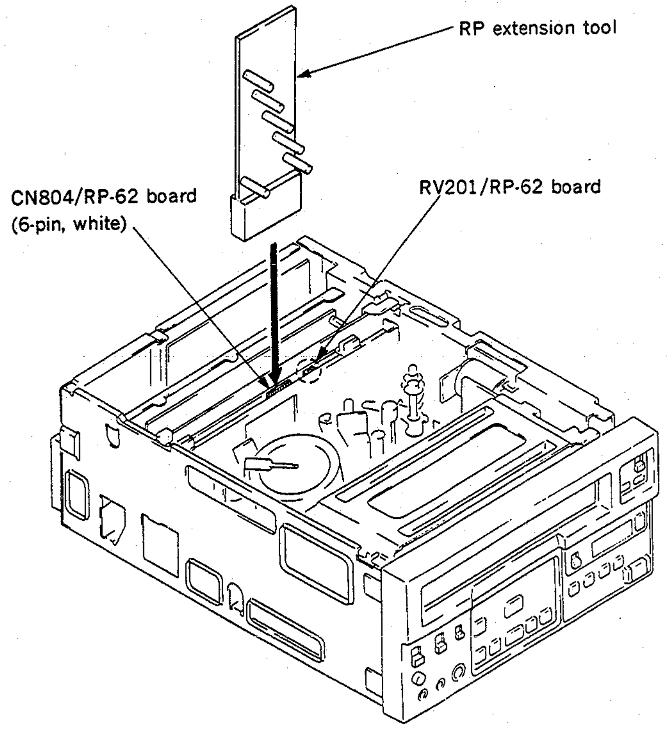
Location of TP terminals on RP extension tool


TP terminal
SW'ING PULSE
VIDEO PB RF
VIDEO REC CURR.
VIDEO PB S-VHS RF
GND
AFM REC CURR.
Connector, 6-pin

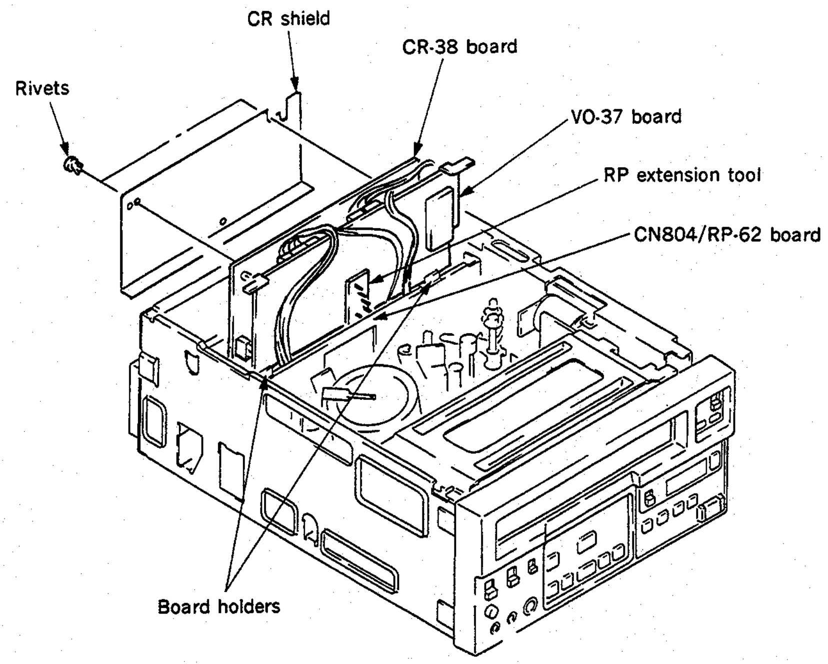
Location of CN804 and RV201 on RP-62 board. (A side)


E
D
C
B
A
1
6
1
CN804
RV201

Appearance of VTR for RP-62 board adjustment.


RP extension tool
CN804/RP-62 board
(6-pin, white)
RV201/RP-62 board

Appearance of VTR for CR-38 and VO-37 board adjustment.


CR shield
CR-38 board
Rivets
VO-37 board
RP extension tool
CN804/RP-62 board
Board holders

1. Connect the RP extension tool to CN804/RP-62.
2. Refer to section 2-8-2 on 2-6 page, insert the VO-37 board into the two board holders for standing it.
3. Remove two rivets.
4. Remove the CR shield.

SECTION 11
BLOCK DIAGRAMS

INDEX

Page
OVERALL 11-3
VIDEO/AUDIO SYSTEM. ......RP-62 BOARD 11-4
VIDEO SYSTEM. ....VM-12 BOARD ....11-5 (※1)
...11-7 (※2)
CR-38 BOARD 11-8
VO-37 BOARD 11-11
AUDIO SYSTEM. ....AU-161 BOARD 11-12
SERVO & SYSTEM CONTROL. SS-49 BOARD
KY-219 BOARD 11-15

Notes

1. VM-12基板のブロック図は2つあります。
   There are two kinds of block diagrams for VM-12 board.

   - SVO-9500MD (J) ....S/N 10001 to 10310
   - SVO-9500MD (UC)......S/N 10001 to 11620, 20001 to 21200 } ※ 1
   - SVO-9500MD4 (UC) ....S/N 10001 to 12200

   - SVO-9500MD (J) ....S/N 20001 and higher
   - SVO-9500MD (UC)......S/N 21201 and higher } ※2
   - SVO-9500MD4 (UC) ....S/N 12201 and higher

2. 各波形写真は，測定点（ロケーション）と動作モードが記載されています。
   （このときのロケーションは基板上の位置を示しています。）
   The mentioned items at waveform photograph of this section are measurement point (address on board) and machine operation mode.

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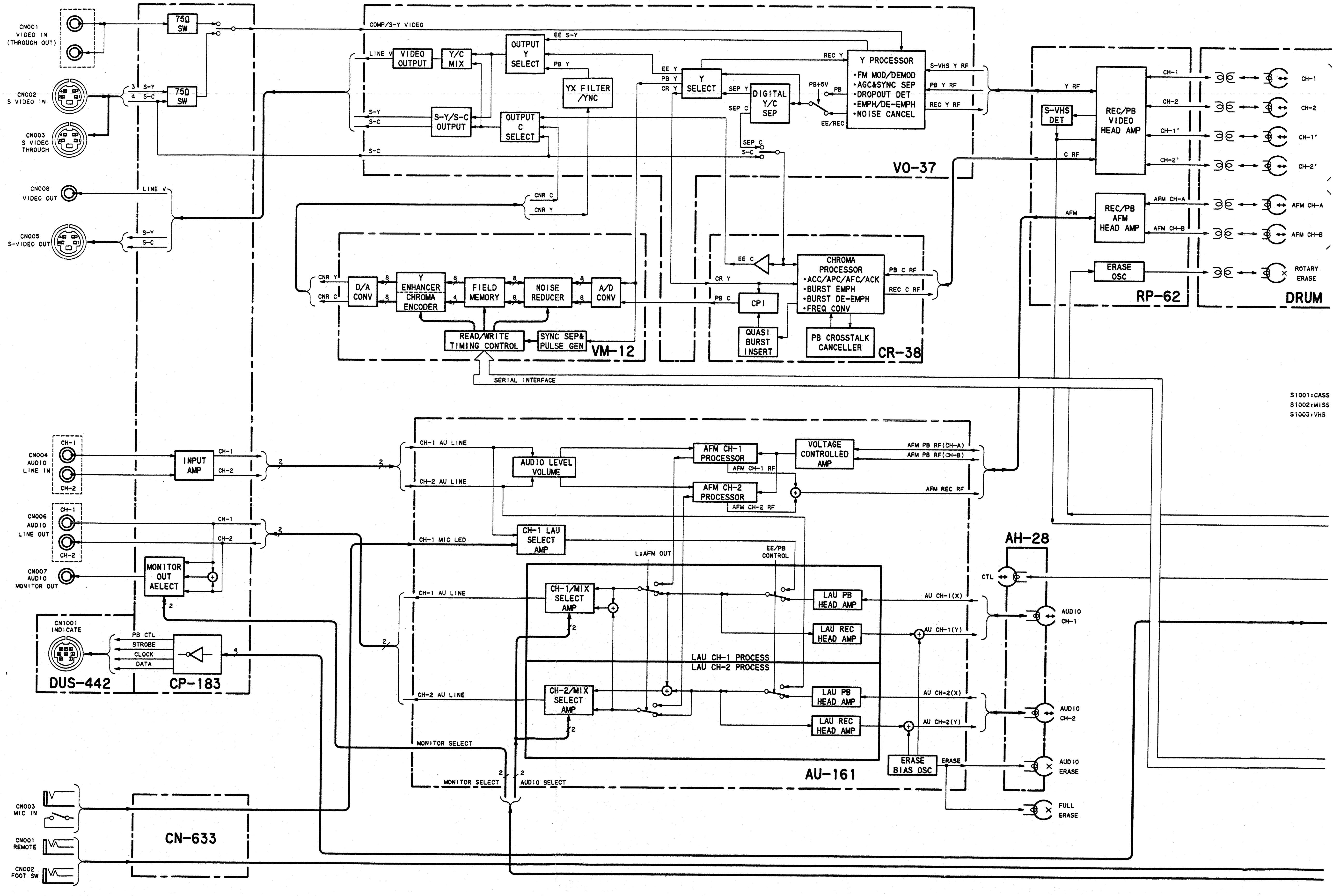
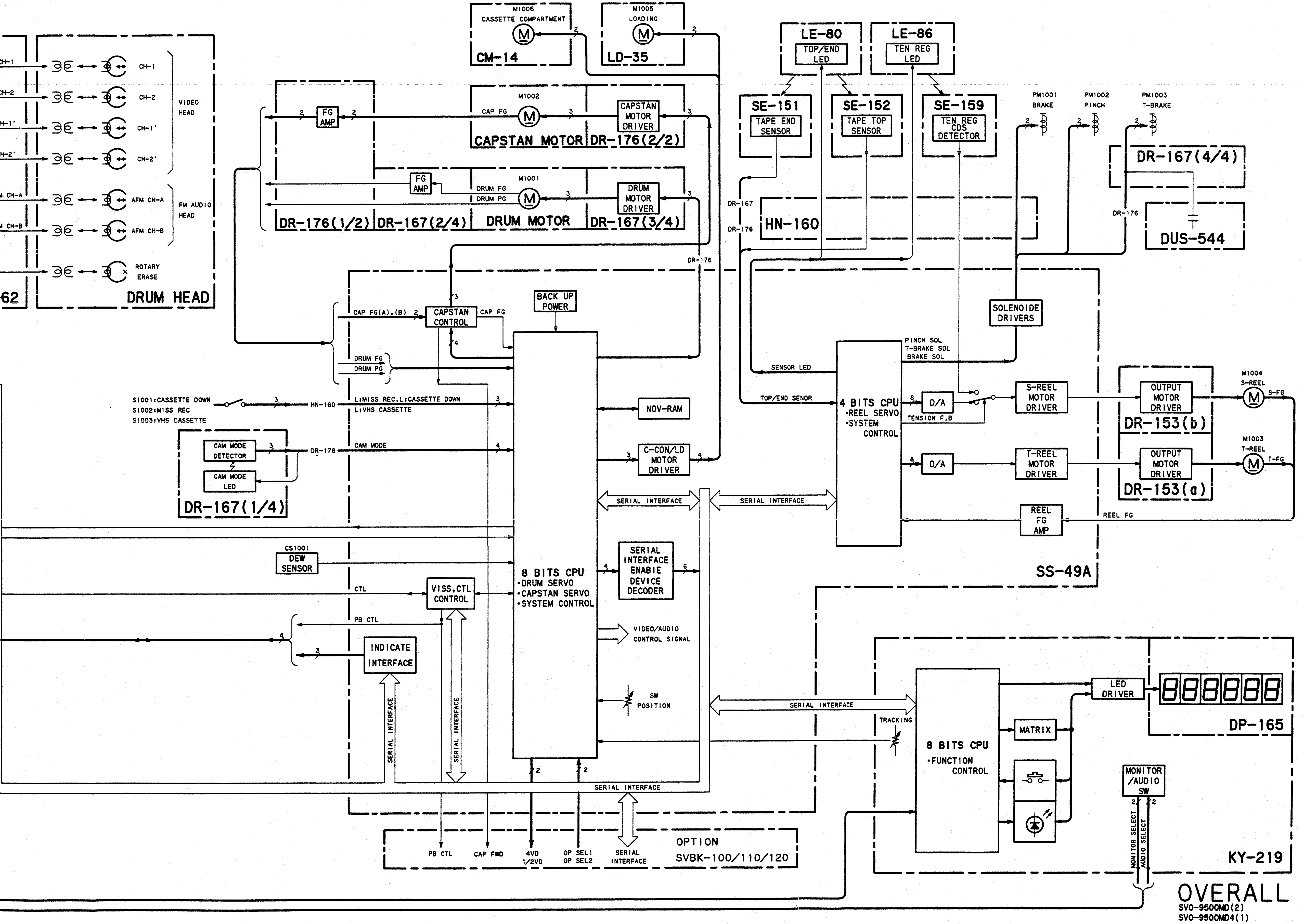
OVERALL


CN001
VIDEO IN
(THROUGH OUT)
CN002
S VIDEO IN
CN003
S VIDEO THROUGH
CN008
VIDEO OUT
CN005
S-VIDEO OUT
75Ω SW
75Ω SW
S-Y
S-C
LINE V
COMP/S-Y VIDEO
LINE V
VIDEO OUTPUT
Y/C MIX
OUTPUT Y SELECT
EE S-Y
PB Y
S-Y/S-C OUTPUT
OUTPUT C SELECT
YX FILTER /YNC
EE Y
PB Y
CR Y
Y SELECT
SEP Y
SEP C
DIGITAL Y/C SEP
PB+5V
PB
EE/REC
REC Y
Y PROCESSOR
•FM MOD/DEMOD
•AGC&SYNC SEP
•DROPOUT DET
•EMPH/DE-EMPH
•NOISE CANCEL
S-VHS Y RF
PB Y RF
REC Y RF
SEP C
S-C
VO-37
CNR C
CNR Y
CNR Y
CNR C
D/A CONV
Y ENHANCER CHROMA ENCODER
FIELD MEMORY
NOISE REDUCER
A/D CONV
8
4
READ/WRITE TIMING CONTROL
SYNC SEP& PULSE GEN
VM-12
SERIAL INTERFACE
EE C
CR Y
PB C
CPI
QUASI BURST INSERT
CHROMA PROCESSOR
•ACC/APC/AFC/ACK
•BURST EMPH
•BURST DE-EMPH
•FREQ CONV
PB C RF
REC C RF
PB CROSSTALK CANCELLER
CR-38
Y RF
C RF
S-VHS DET
REC/PB VIDEO HEAD AMP
CH-1
CH-2
CH-1'
CH-2'
AFM
REC/PB AFM HEAD AMP
AFM CH-A
AFM CH-B
ERASE OSC
RP-62
CH-1
CH-2
CH-1'
CH-2'
AFM CH-A
AFM CH-B
ROTARY ERASE
DRUM
S1001:CASS
S1002:MISS
S1003:VHS
CN004
AUDIO LINE IN
CH-1
CH-2
INPUT AMP
CN006
AUDIO LINE OUT
CN007
AUDIO MONITOR OUT
MONITOR OUT AELECT
CN1001
INDICATE
PB CTL
STROBE
CLOCK
DATA
DUS-442
CP-183
CH-1 AU LINE
CH-2 AU LINE
AUDIO LEVEL VOLUME
AFM CH-1 PROCESSOR
AFM CH-1 RF
AFM CH-2 PROCESSOR
AFM CH-2 RF
VOLTAGE CONTROLLED AMP
AFM PB RF(CH-A)
AFM PB RF(CH-B)
AFM REC RF
CH-1 MIC LED
CH-1 LAU SELECT AMP
L:AFM OUT
EE/PB CONTROL
CH-1 AU LINE
CH-1/MIX SELECT AMP
LAU PB HEAD AMP
LAU REC HEAD AMP
AU CH-1(X)
AU CH-1(Y)
LAU CH-1 PROCESS
LAU CH-2 PROCESS
CH-2 AU LINE
CH-2/MIX SELECT AMP
LAU PB HEAD AMP
LAU REC HEAD AMP
AU CH-2(X)
AU CH-2(Y)
ERASE BIAS OSC
ERASE
MONITOR SELECT
MONITOR SELECT
AUDIO SELECT
AU-161
AH-28
CTL
AUDIO CH-1
AUDIO CH-2
AUDIO ERASE
FULL ERASE
CN003
MIC IN
CN001
REMOTE
CN002
FOOT SW
CN-633

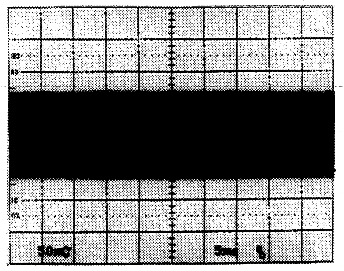

M1006
CASSETTE COMPARTMENT
CM-14
M1005
LOADING
LD-35
LE-80
TOP/END LED
LE-86
TEN REG LED
SE-151
TAPE END SENSOR
SE-152
TAPE TOP SENSOR
SE-159
TEN REG CDS DETECTOR
PM1001 BRAKE
PM1002 PINCH
PM1003 T-BRAKE
DR-167(4/4)
DUS-544
HN-160
DR-167
DR-176
CH-1
CH-2
CH-1'
CH-2'
VIDEO HEAD
AFM CH-A
AFM CH-B
FM AUDIO HEAD
ROTARY ERASE
62
DRUM HEAD
FG AMP
M1002
CAP FG
CAPSTAN MOTOR DRIVER
CAPSTAN MOTOR
DR-176(2/2)
M1001
DRUM FG
DRUM PG
DRUM MOTOR DRIVER
DR-176(1/2)
DR-167(2/4)
DRUM MOTOR
DR-167(3/4)
CAP FG(A),(B)
CAPSTAN CONTROL
BACK UP POWER
S1001:CASSETTE DOWN
S1002:MISS REC
S1003:VHS CASSETTE
L:MISS REC,L:CASSETTE DOWN
L:VHS CASSETTE
CAM MODE DETECTOR
CAM MODE LED
DR-167(1/4)
CAM MODE
NOV-RAM
C-CON/LD MOTOR DRIVER
SERIAL INTERFACE
SERIAL INTERFACE ENABIE DEVICE DECODER
CS1001
DEW SENSOR
CTL
VISS,CTL CONTROL
8 BITS CPU
•DRUM SERVO
•CAPSTAN SERVO
•SYSTEM CONTROL
PB CTL
INDICATE INTERFACE
VIDEO/AUDIO CONTROL SIGNAL
SW POSITION
PB CTL
CAP FWD
4VD 1/2VD
OP SEL1 OP SEL2
SERIAL INTERFACE
OPTION
SVBK-100/110/120
SOLENOIDE DRIVERS
PINCH SOL
T-BRAKE SOL
BRAKE SOL
SENSOR LED
TOP/END SENOR
4 BITS CPU
•REEL SERVO
•SYSTEM CONTROL
D/A
TENSION F.B
S-REEL MOTOR DRIVER
T-REEL MOTOR DRIVER
OUTPUT MOTOR DRIVER
DR-153(b)
DR-153(a)
M1004 S-REEL
S-FG
M1003 T-REEL
T-FG
REEL FG AMP
REEL FG
SS-49A
TRACKING
8 BITS CPU
•FUNCTION CONTROL
MATRIX
LED DRIVER
888888
DP-165
MONITOR /AUDIO SW
MONITOR SELECT
AUDIO SELECT
KY-219

OVERALL

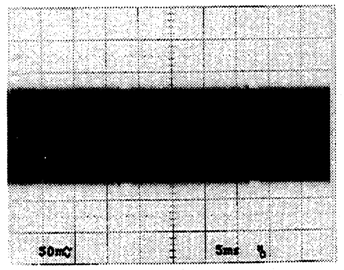
SVO-9500MD(2)
SVO-9500MD4(1)

VIDEO & AFM HEAD AMP

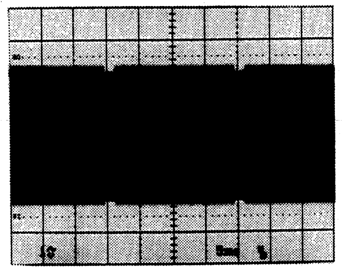
① CN804 pin 1 (C-1) REC mode



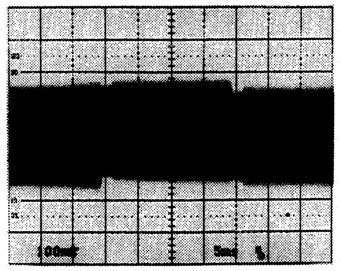
② CN804 pin 2 (C-1) PB mode (S)
CN804 pin 5 (C-1) (TRIG)



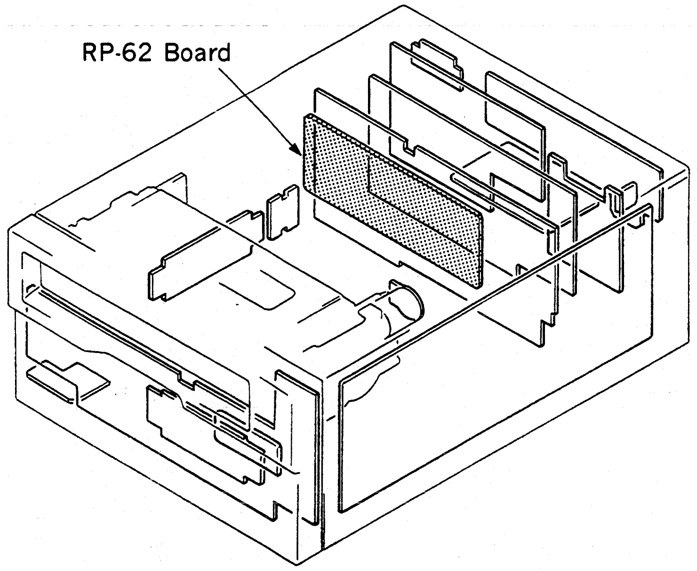
③ CN804 pin 3 (C-1) REC mode
CN804 pin 5 (C-1) (TRIG)

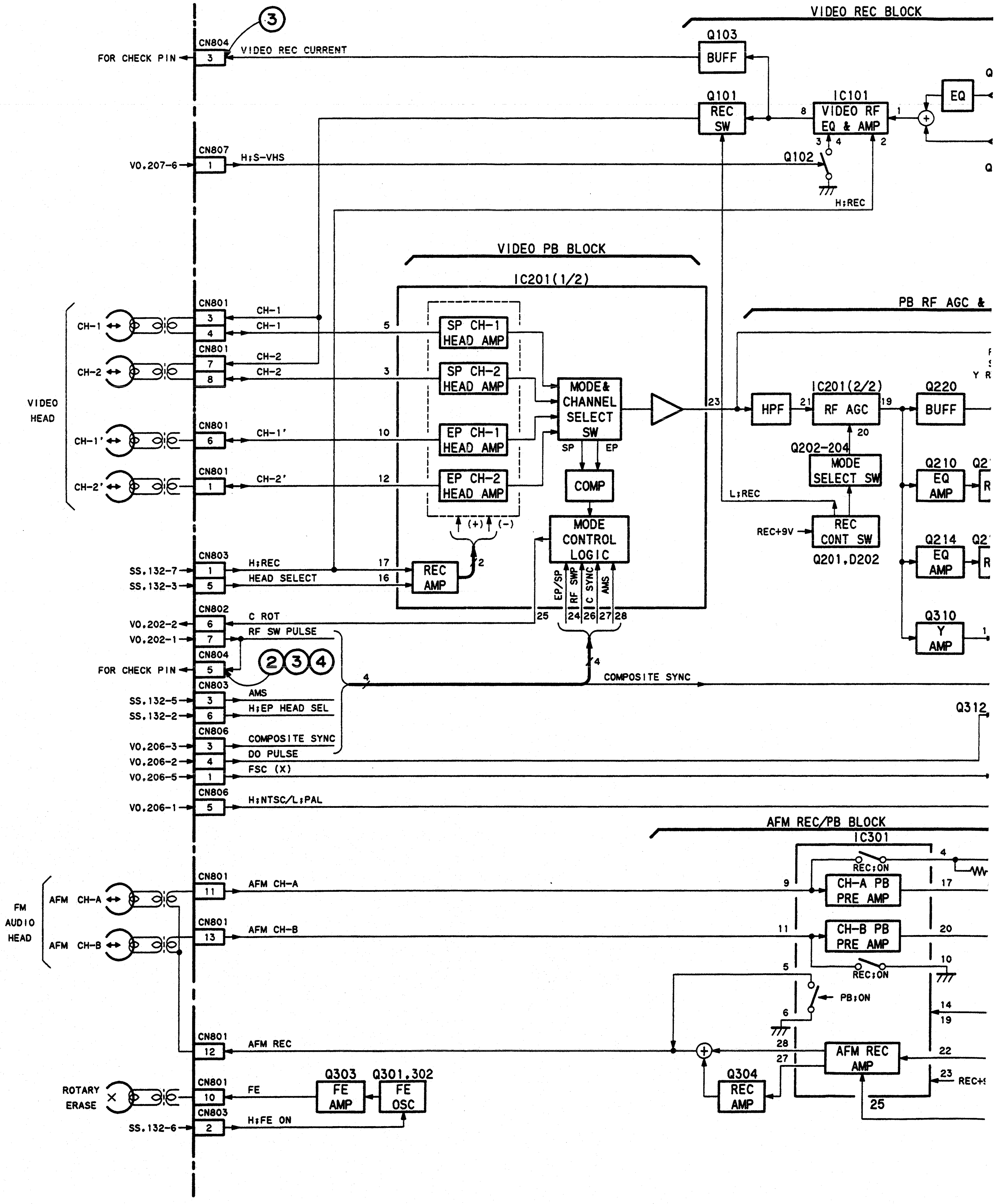


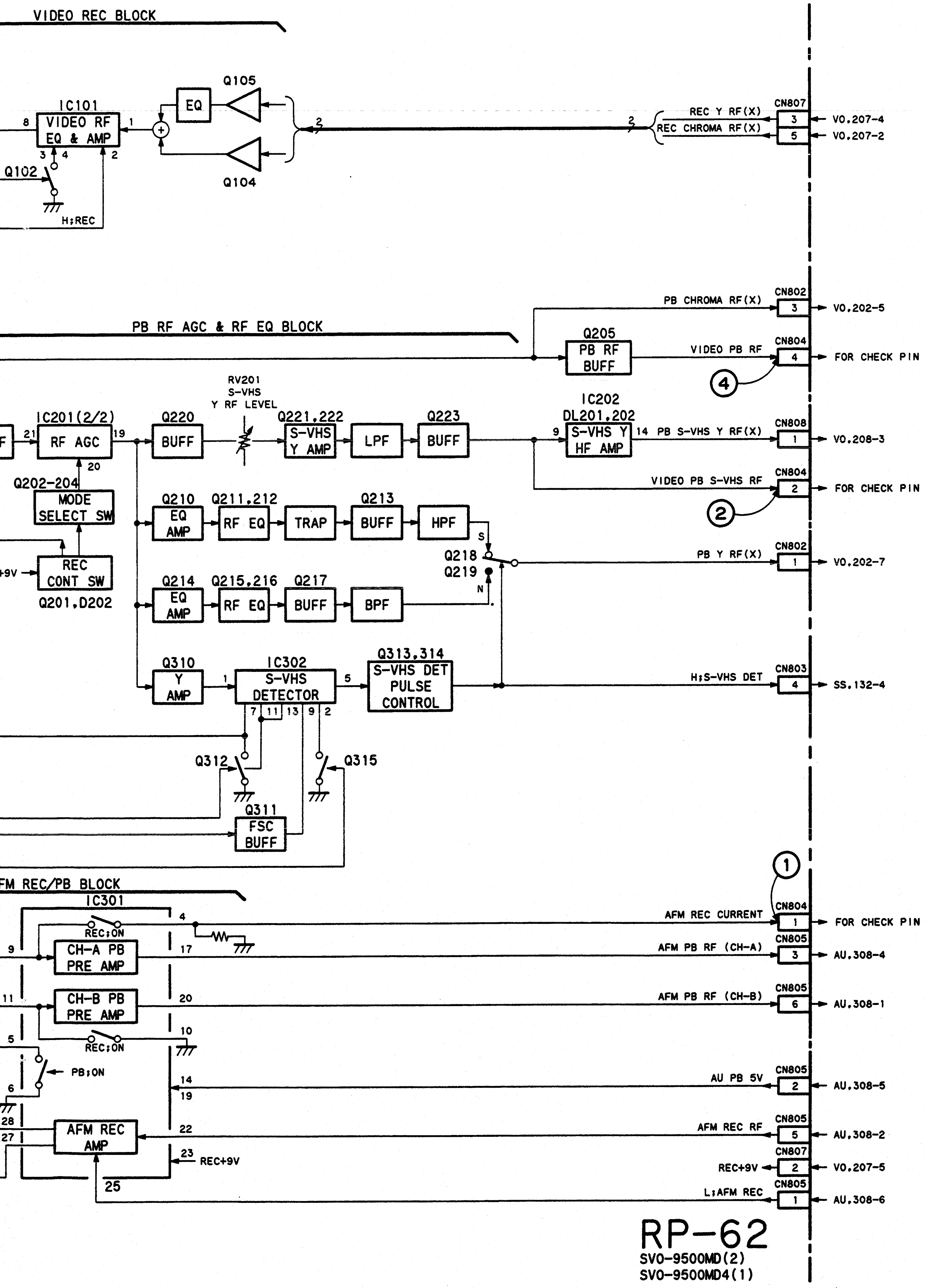
④ CN804 pin 4 (C-1) PB mode (N)
CN804 pin 5 (C-1) (TRIG)



Measurement Condition
S-VIDEO IN: SMPTE color bars
REC mode: S-VHS
PB mode (S): KRV-45HNS or KRV-51HN
PB mode (N): KRV-45NS or KRV-51N



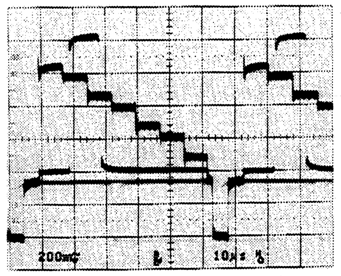

VIDEO REC BLOCK
FOR CHECK PIN
CN804 3
VIDEO REC CURRENT
③
Q103 BUFF
Q101 REC SW
IC101 VIDEO RF EQ & AMP
EQ
CN807 1
VO.207-6
H:S-VHS
Q102
H:REC
VIDEO PB BLOCK
IC201(1/2)
PB RF AGC &
VIDEO HEAD
CH-1
CH-2
CH-1'
CH-2'
CN801
SP CH-1 HEAD AMP
SP CH-2 HEAD AMP
EP CH-1 HEAD AMP
EP CH-2 HEAD AMP
MODE& CHANNEL SELECT SW
SP
EP
COMP
MODE CONTROL LOGIC
EP/SP
RF SWP
C SYNC
AMS
HPF
IC201(2/2) RF AGC
Q220 BUFF
Q202-204 MODE SELECT SW
REC CONT SW
Q201,D202
L:REC
REC+9V
Q210 EQ AMP
Q214 EQ AMP
Q310 Y AMP
Q312
SS.132-7
SS.132-3
CN803
H:REC
HEAD SELECT
REC AMP
CN802
VO.202-2
VO.202-1
C ROT
RF SW PULSE
CN804 5
②③④
AMS
SS.132-5
SS.132-2
H:EP HEAD SEL
CN806
VO.206-3
VO.206-2
VO.206-5
VO.206-1
COMPOSITE SYNC
DO PULSE
FSC (X)
H:NTSC/L:PAL
AFM REC/PB BLOCK
IC301
FM AUDIO HEAD
AFM CH-A
AFM CH-B
AFM REC
REC:ON
CH-A PB PRE AMP
CH-B PB PRE AMP
PB:ON
AFM REC AMP
Q304 REC AMP
ROTARY ERASE
FE
Q303 FE AMP
Q301,302 FE OSC
SS.132-6
H:FE ON
REC+


VIDEO REC BLOCK
IC101
VIDEO RF EQ & AMP
Q102
H;REC
EQ
Q105
Q104
REC Y RF(X)
REC CHROMA RF(X)
CN807
V0.207-4
V0.207-2
PB CHROMA RF(X)
CN802
V0.202-5
PB RF AGC & RF EQ BLOCK
Q205
PB RF BUFF
VIDEO PB RF
CN804
FOR CHECK PIN
④
RV201
S-VHS
Y RF LEVEL
IC201(2/2)
RF AGC
Q220
BUFF
Q221,222
S-VHS Y AMP
LPF
Q223
BUFF
IC202
DL201,202
S-VHS Y HF AMP
PB S-VHS Y RF(X)
CN808
V0.208-3
Q202-204
MODE SELECT SW
VIDEO PB S-VHS RF
FOR CHECK PIN
②
Q210
EQ AMP
Q211,212
RF EQ
TRAP
Q213
BUFF
HPF
REC CONT SW
Q201,D202
Q218
Q219
PB Y RF(X)
V0.202-7
Q214
EQ AMP
Q215,216
RF EQ
Q217
BUFF
BPF
Q310
Y AMP
IC302
S-VHS DETECTOR
Q313,314
S-VHS DET PULSE CONTROL
H;S-VHS DET
CN803
SS.132-4
Q312
Q315
Q311
FSC BUFF
①
AFM REC/PB BLOCK
IC301
REC;ON
CH-A PB PRE AMP
CH-B PB PRE AMP
REC;ON
PB;ON
AFM REC AMP
AFM REC CURRENT
FOR CHECK PIN
AFM PB RF (CH-A)
CN805
AU.308-4
AFM PB RF (CH-B)
AU.308-1
AU PB 5V
AU.308-5
AFM REC RF
AU.308-2
REC+9V
V0.207-5
L;AFM REC
AU.308-6
RP-62
SVO-9500MD(2)
SVO-9500MD4(1)

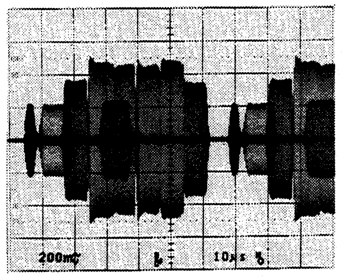
Y/CHROMA NOISE REDUCER

SVO-9500MD (J) ......S/N 10001 to 10310
SVO-9500MD (UC) ....S/N 10001 to 11620
and S/N 20001 to 21200
SVO-9500MD4 (UC)....S/N 10001 to 12200

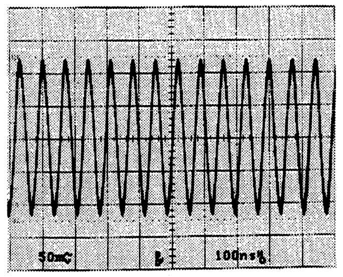
① TP100 (B-5) PB mode



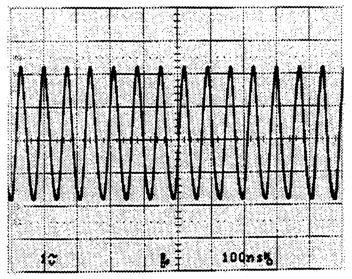
② TP120 (D-5) PB mode



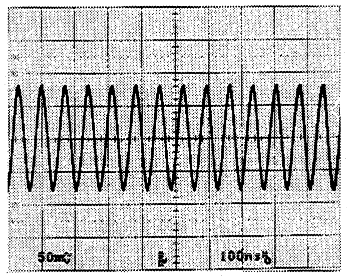
③ TP140 (B-4)



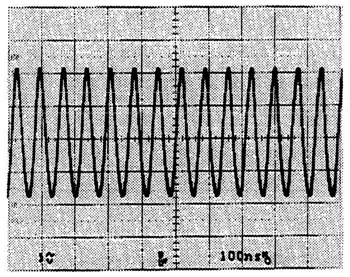
④ TP141 (B-4)



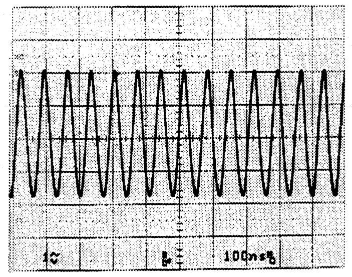
⑤ TP230 (E-5)



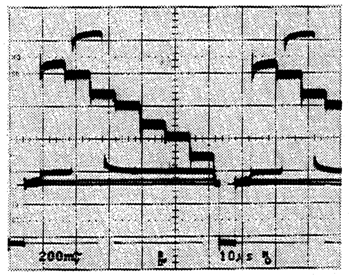
⑥ TP231 (D-4)



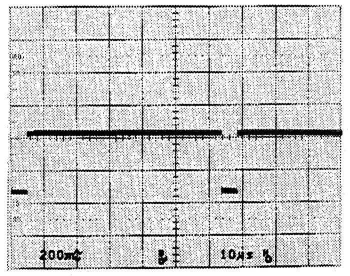
⑦ TP500 (F-1)



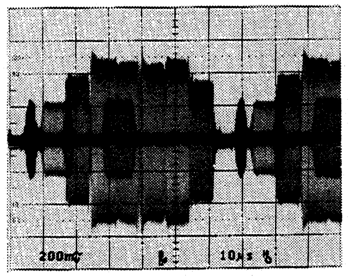
⑧ TP10 (A-1) PB mode



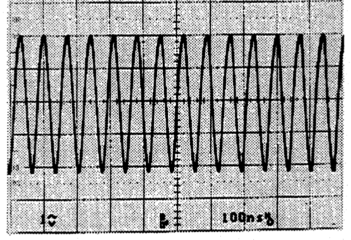
TP10 (A-1) STOP (E-E) mode

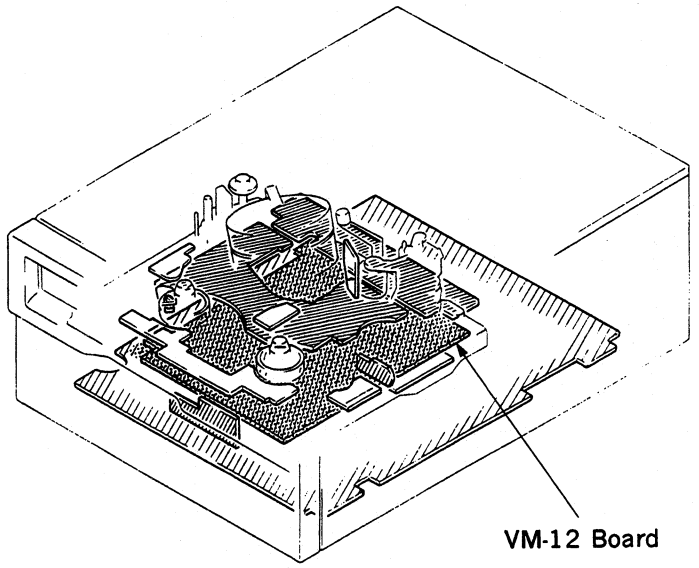


⑨ TP30 (A-1) PB mode



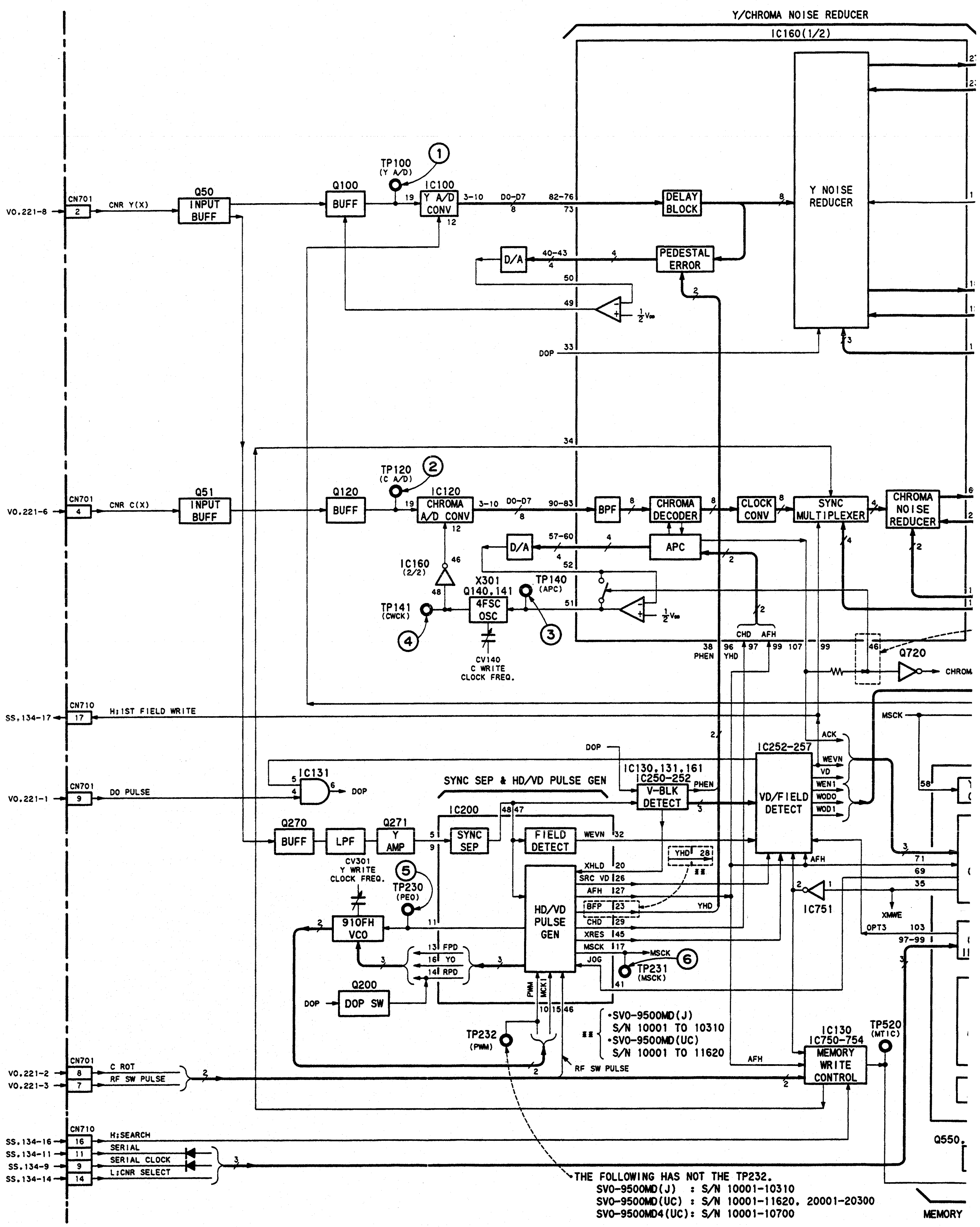
⑩ TP600 (D-1)
TP620 (C-1)

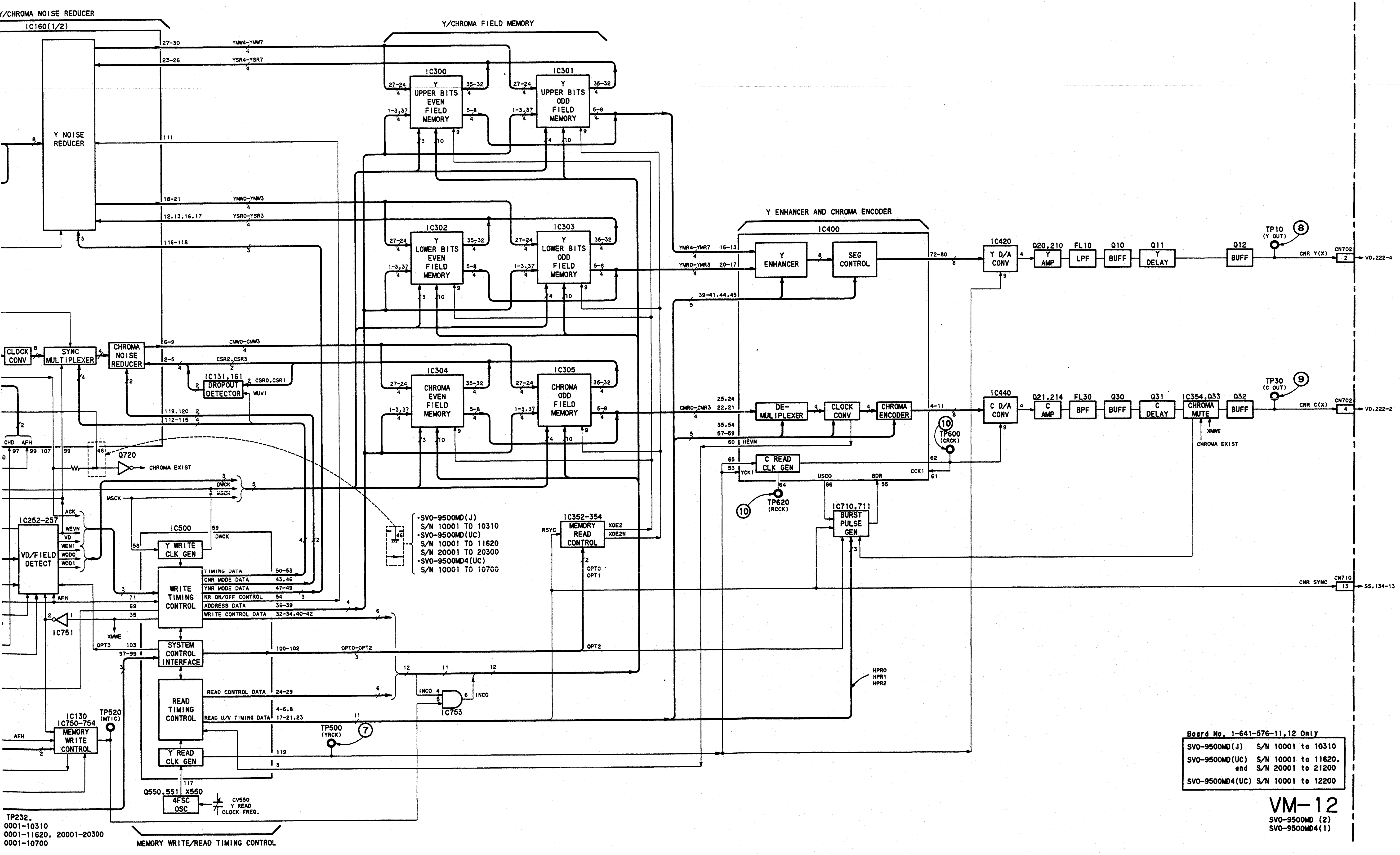




Measurement Condition

PB mode: KRV-45HNS or KRV-51HN
STOP (E-E) mode: S-VHS


Y/CHROMA NOISE REDUCER
IC160(1/2)
Y NOISE REDUCER
VO.221-8
CN701
CNR Y(X)
Q50 INPUT BUFF
Q100 BUFF
TP100 (Y A/D)
IC100 Y A/D CONV
DELAY BLOCK
PEDESTAL ERROR
D/A
DOP
VO.221-6
CNR C(X)
Q51 INPUT BUFF
Q120 BUFF
TP120 (C A/D)
IC120 CHROMA A/D CONV
BPF
CHROMA DECODER
CLOCK CONV
SYNC MULTIPLEXER
CHROMA NOISE REDUCER
APC
IC160 (2/2)
X301 Q140,141 4FSC OSC
TP140 (APC)
TP141 (CWCK)
CV140 C WRITE CLOCK FREQ.
Q720
CHROMA
SS.134-17
CN710
H:1ST FIELD WRITE
MSCK
IC131
VO.221-1
DO PULSE
SYNC SEP & HD/VD PULSE GEN
IC130,131,161 IC250-252 V-BLK DETECT
IC252-257 VD/FIELD DETECT
Q270 BUFF
LPF
Q271 Y AMP
IC200 SYNC SEP
FIELD DETECT
HD/VD PULSE GEN
CV301 Y WRITE CLOCK FREQ.
TP230 (PEO)
910FH VCO
Q200 DOP SW
TP231 (MSCK)
IC751
TP232 (PWM)
·SVO-9500MD(J) S/N 10001 TO 10310
·SVO-9500MD(UC) S/N 10001 TO 11620
VO.221-2
VO.221-3
C ROT
RF SW PULSE
IC130 IC750-754 MEMORY WRITE CONTROL
TP520 (MTIC)
SS.134-16
SS.134-11
SS.134-9
SS.134-14
H:SEARCH
SERIAL
SERIAL CLOCK
L:CNR SELECT
Q550
MEMORY
THE FOLLOWING HAS NOT THE TP232.
SVO-9500MD(J) : S/N 10001-10310
SVO-9500MD(UC) : S/N 10001-11620, 20001-20300
SVO-9500MD4(UC): S/N 10001-10700


Y/CHROMA NOISE REDUCER
IC160(1/2)
Y NOISE REDUCER
Y/CHROMA FIELD MEMORY
IC300
Y UPPER BITS EVEN FIELD MEMORY
IC301
Y UPPER BITS ODD FIELD MEMORY
IC302
Y LOWER BITS EVEN FIELD MEMORY
IC303
Y LOWER BITS ODD FIELD MEMORY
IC304
CHROMA EVEN FIELD MEMORY
IC305
CHROMA ODD FIELD MEMORY
YMW4–YMW7
YSR4–YSR7
YMW0–YMW3
YSR0–YSR3
CMW0–CMW3
CSR2,CSR3
CSR0,CSR1
WUV1
CLOCK CONV
SYNC MULTIPLEXER
CHROMA NOISE REDUCER
IC131,161
DROPOUT DETECTOR
Q720
CHROMA EXIST
CHD
AFH
DWCK
MSCK
ACK
IC252–257
VD/FIELD DETECT
WEVN
VD
WEN1
WOD0
WOD1
IC500
Y WRITE CLK GEN
WRITE TIMING CONTROL
TIMING DATA
CNR MODE DATA
YNR MODE DATA
NR ON/OFF CONTROL
ADDRESS DATA
WRITE CONTROL DATA
SYSTEM CONTROL INTERFACE
OPT3
XMWE
IC751
READ TIMING CONTROL
READ CONTROL DATA
READ U/V TIMING DATA
Y READ CLK GEN
Q550,551 X550
4FSC OSC
CV550 Y READ CLOCK FREQ.
IC130 IC750–754
MEMORY WRITE CONTROL
TP520 (MTIC)
TP232.
0001-10310
0001-11620, 20001-20300
0001-10700
MEMORY WRITE/READ TIMING CONTROL
•SVO-9500MD(J)
S/N 10001 TO 10310
•SVO-9500MD(UC)
S/N 10001 TO 11620
S/N 20001 TO 20300
•SVO-9500MD4(UC)
S/N 10001 TO 10700
IC352–354
MEMORY READ CONTROL
RSYC
XOE2
XOE2N
OPT0 OPT1
OPT0–OPT2
OPT2
IC753
INCO
TP500 (YRCK)
⑦
Y ENHANCER AND CHROMA ENCODER
IC400
Y ENHANCER
SEG CONTROL
YMR4–YMR7
YMR0–YMR3
CMR0–CMR3
DE-MULIPLEXER
CLOCK CONV
CHROMA ENCODER
REVN
C READ CLK GEN
YCK1
USCO
BDR
CCK1
TP620 (RCCK)
⑩
TP600 (CRCK)
IC710,711
BURST PULSE GEN
HPR0 HPR1 HPR2
IC420
Y D/A CONV
Q20,210
Y AMP
FL10
LPF
Q10
BUFF
Q11
Y DELAY
Q12
BUFF
TP10 (Y OUT)
⑧
CNR Y(X)
CN702
VO.222-4
IC440
C D/A CONV
Q21,214
C AMP
FL30
BPF
Q30
BUFF
Q31
C DELAY
IC354,Q33
CHROMA MUTE
XMWE
CHROMA EXIST
Q32
BUFF
TP30 (C OUT)
⑨
CNR C(X)
VO.222-2
CNR SYNC
CN710
SS.134-13
VM-12
SVO-9500MD (2)
SVO-9500MD4(1)

Board No. 1-641-576-11,12 Only

SVO-9500MD(J)	S/N 10001 to 10310
SVO-9500MD(UC)	S/N 10001 to 11620, and S/N 20001 to 21200
SVO-9500MD4(UC)	S/N 10001 to 12200

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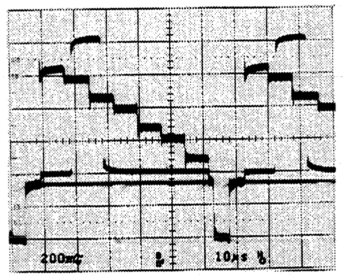
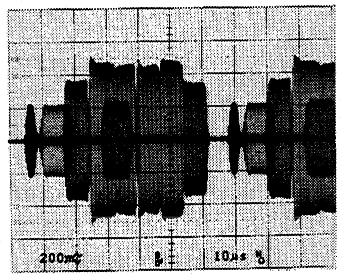
Y/CHROMA NOISE REDUCER

SVO-9500MD (J) ......S/N 20001 and higher
SVO-9500MD (UC) ....S/N 21201 and higher
SVO-9500MD4 (UC)....S/N 12201 and higher

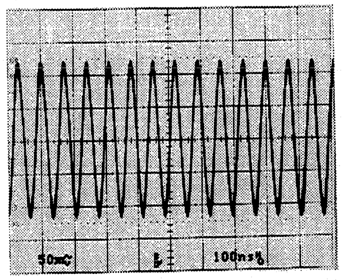
① TP100 (B-5) PB mode



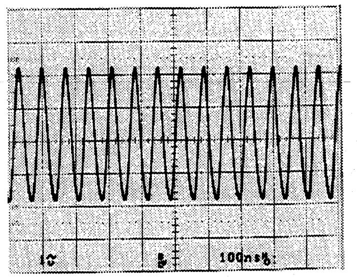
② TP120 (D-5) PB mode



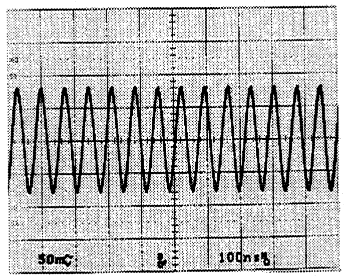
③ TP140 (B-4)



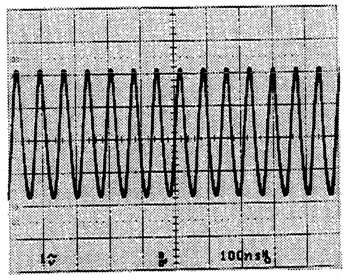
④ TP141 (B-4)



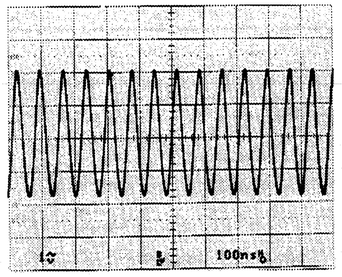
⑤ TP230 (E-5)



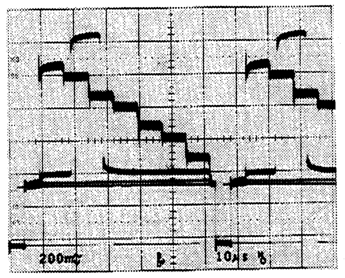
⑥ TP231 (D-4)



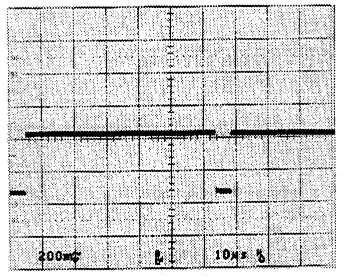
⑦ TP500 (F-1)



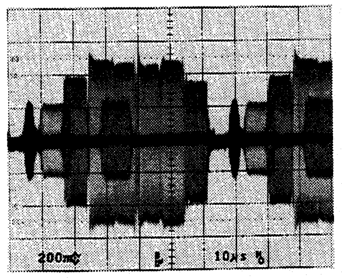
⑧ TP10 (A-1) PB mode



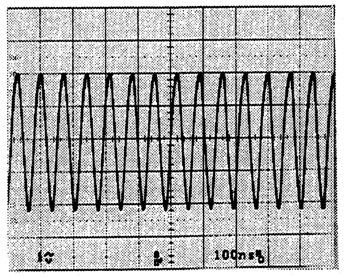
TP10 (A-1) STOP (E-E) mode

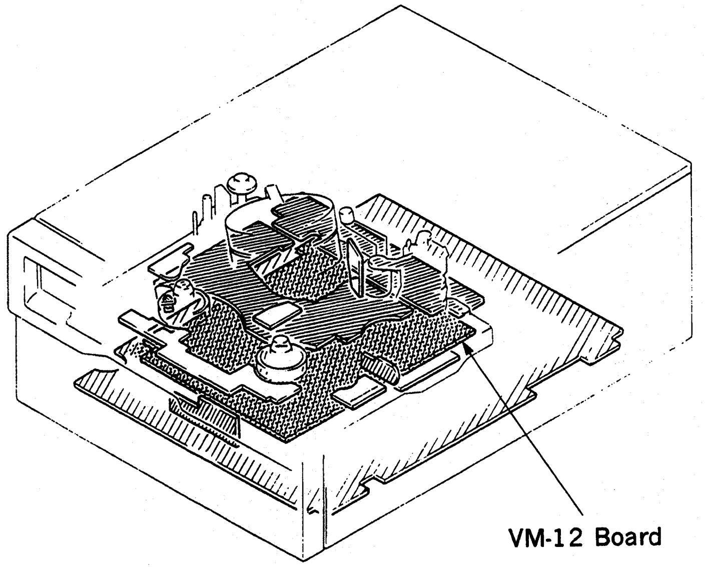


⑨ TP30 (A-1) PB mode



⑩ TP600 (D-1)
TP620 (C-1)

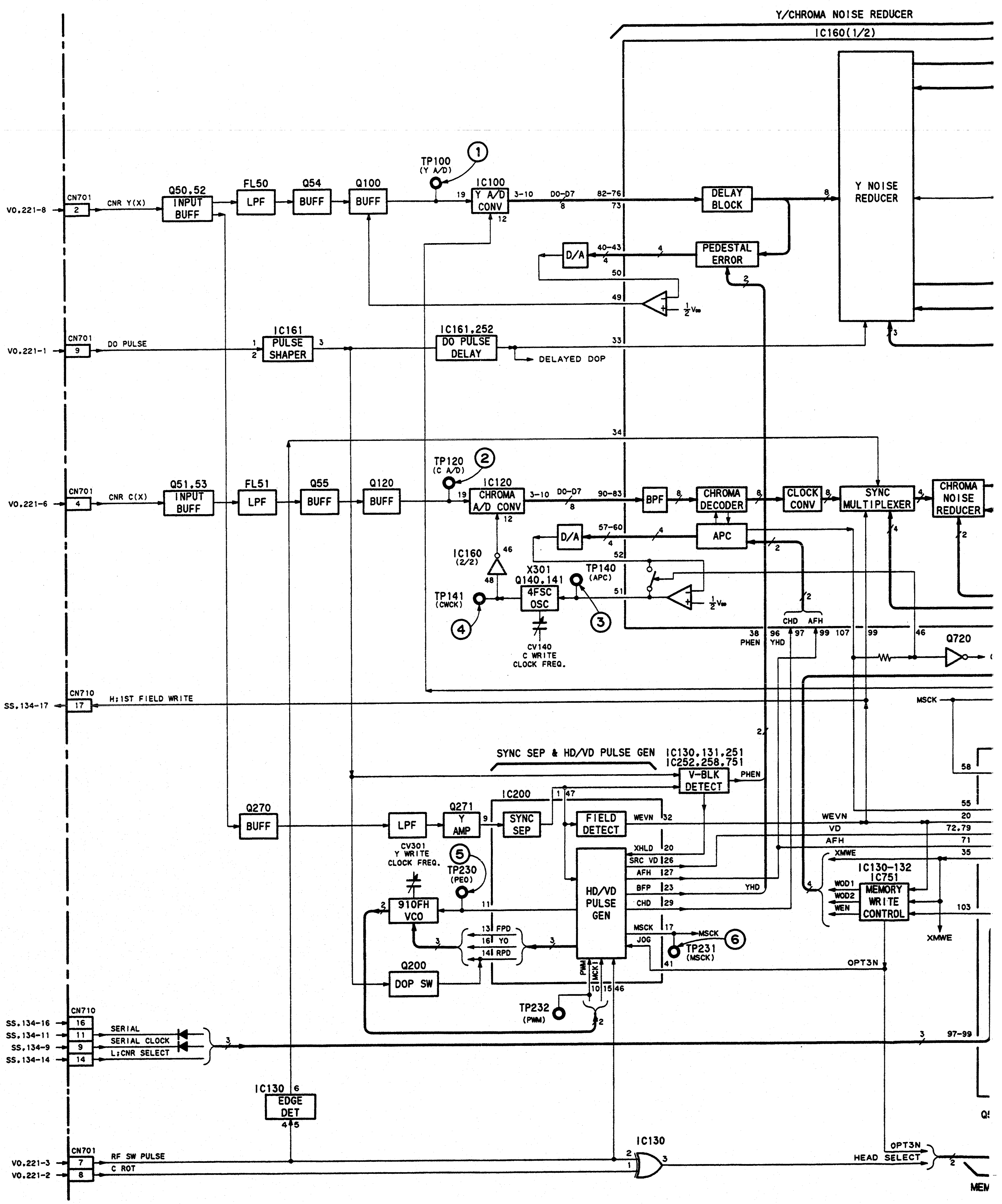


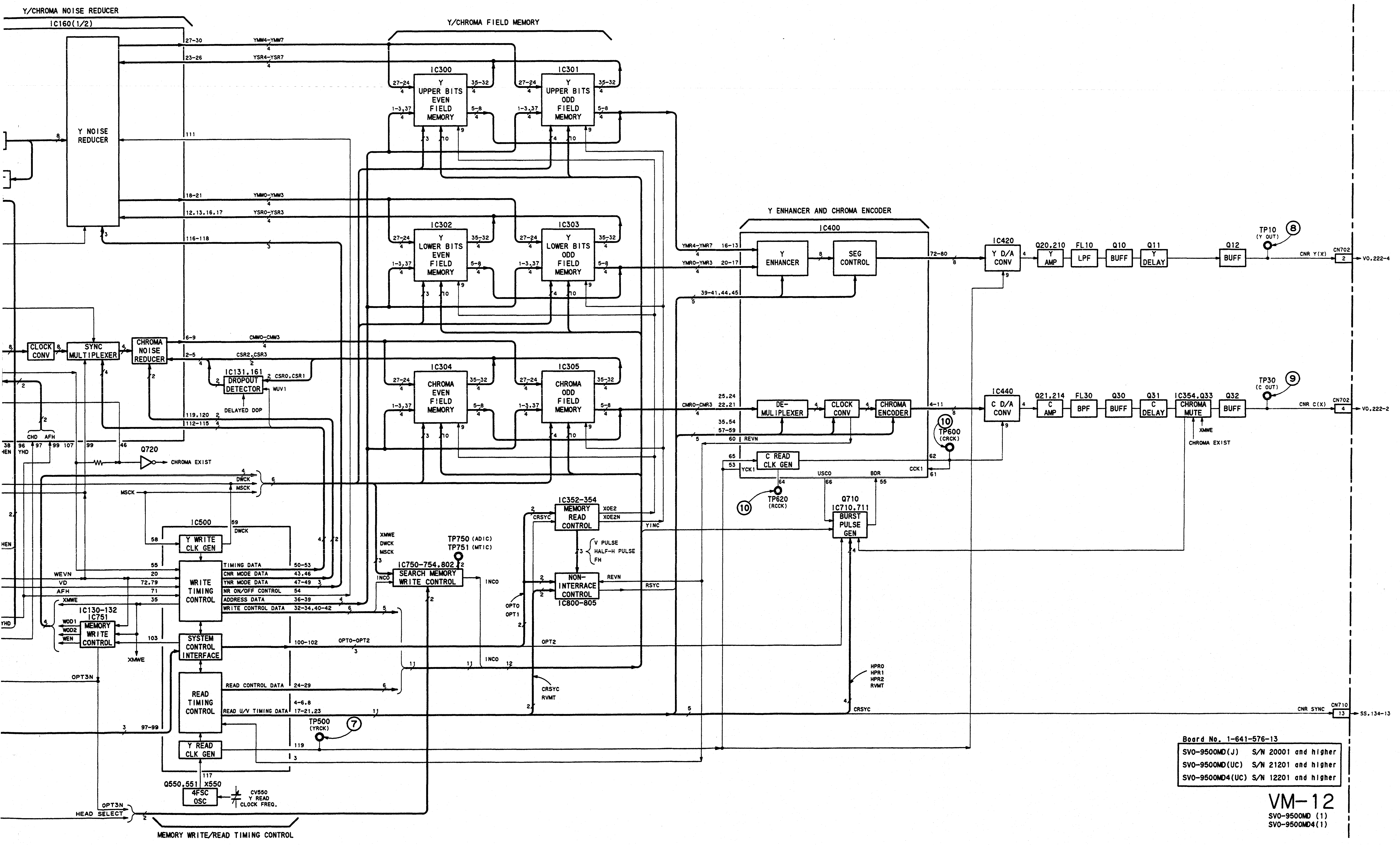


Measurement Condition

PB mode: KRV-45HNS or KRV-51HN

STOP (E-E) mode: S-VHS


Y/CHROMA NOISE REDUCER
IC160(1/2)
VO.221-8
CN701
2
CNR Y(X)
Q50,52
INPUT BUFF
FL50
LPF
Q54
BUFF
Q100
BUFF
TP100 (Y A/D)
①
IC100
Y A/D CONV
19
12
3-10
D0-D7
8
82-76
73
DELAY BLOCK
Y NOISE REDUCER
D/A
40-43
4
PEDESTAL ERROR
50
49
½VDD
VO.221-1
CN701
9
DO PULSE
IC161
PULSE SHAPER
IC161,252
DO PULSE DELAY
DELAYED DOP
33
34
VO.221-6
CN701
4
CNR C(X)
Q51,53
INPUT BUFF
FL51
LPF
Q55
BUFF
Q120
BUFF
TP120 (C A/D)
②
IC120
CHROMA A/D CONV
90-83
BPF
CHROMA DECODER
CLOCK CONV
SYNC MULTIPLEXER
CHROMA NOISE REDUCER
APC
D/A
57-60
52
51
IC160 (2/2)
46
48
X301
Q140,141
4FSC OSC
TP140 (APC)
③
TP141 (CWCK)
④
CV140
C WRITE CLOCK FREQ.
CHD
AFH
38
PHEN
96
YHD
97
99
107
46
Q720
SS.134-17
CN710
17
H;1ST FIELD WRITE
MSCK
SYNC SEP & HD/VD PULSE GEN
IC130,131,251
IC252,258,751
V-BLK DETECT
PHEN
Q270
BUFF
LPF
Q271
Y AMP
IC200
SYNC SEP
FIELD DETECT
WEVN
32
XHLD
20
SRC VD
26
AFH
27
BFP
23
CHD
29
MSCK
17
JOG
41
HD/VD PULSE GEN
YHD
CV301
Y WRITE CLOCK FREQ.
TP230 (PEO)
⑤
910FH VCO
13 FPD
16 YO
14 RPD
Q200
DOP SW
PWM
MCK1
10
15
46
TP232 (PWM)
TP231 (MSCK)
⑥
58
55
20
72,79
71
35
WEVN
VD
AFH
XMWE
IC130-132
IC751
MEMORY WRITE CONTROL
WOD1
WOD2
WEN
103
XMWE
OPT3N
SS.134-16
SS.134-11
SS.134-9
SS.134-14
CN710
16
11
9
14
SERIAL
SERIAL CLOCK
L;CNR SELECT
97-99
IC130
EDGE DET
VO.221-3
VO.221-2
CN701
7
8
RF SW PULSE
C ROT
IC130
OPT3N
HEAD SELECT
MEM

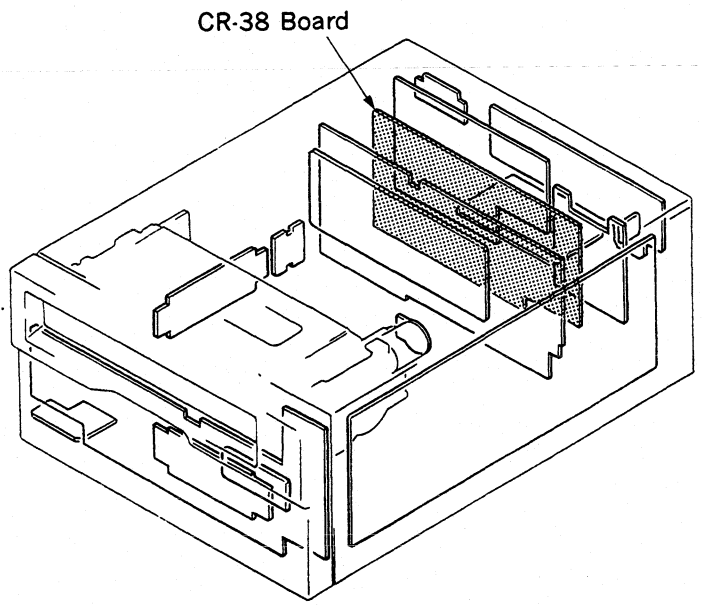

Y/CHROMA NOISE REDUCER
IC160(1/2)
Y NOISE REDUCER
CLOCK CONV
SYNC MULTIPLEXER
CHROMA NOISE REDUCER
IC131,161
DROPOUT DETECTOR
DELAYED DOP
Q720
CHROMA EXIST
Y/CHROMA FIELD MEMORY
IC300
Y UPPER BITS EVEN FIELD MEMORY
IC301
Y UPPER BITS ODD FIELD MEMORY
IC302
Y LOWER BITS EVEN FIELD MEMORY
IC303
Y LOWER BITS ODD FIELD MEMORY
IC304
CHROMA EVEN FIELD MEMORY
IC305
CHROMA ODD FIELD MEMORY
YMW4-YMW7
YSR4-YSR7
YMW0-YMW3
YSR0-YSR3
CMW0-CMW3
CSR2,CSR3
CSR0,CSR1
WUV1
IC500
Y WRITE CLK GEN
WRITE TIMING CONTROL
TIMING DATA
CNR MODE DATA
YNR MODE DATA
NR ON/OFF CONTROL
ADDRESS DATA
WRITE CONTROL DATA
IC130-132
IC751
MEMORY WRITE CONTROL
WOD1
WOD2
WEN
XMWE
SYSTEM CONTROL INTERFACE
READ TIMING CONTROL
READ CONTROL DATA
READ U/V TIMING DATA
Y READ CLK GEN
Q550,551 X550
4FSC OSC
CV550 Y READ CLOCK FREQ.
OPT3N
HEAD SELECT
MEMORY WRITE/READ TIMING CONTROL
WEVN
VD
AFH
MSCK
DWCK
XMWE
TP750 (ADIC)
TP751 (MTIC)
IC750-754,802
SEARCH MEMORY WRITE CONTROL
INCO
TP500 (YRCK)
⑦
IC352-354
MEMORY READ CONTROL
XOE2
XOE2N
CRSYC
V PULSE
HALF-H PULSE
FH
NON-INTERRACE CONTROL
IC800-805
REVN
RSYC
OPT0
OPT1
OPT0-OPT2
OPT2
YINC
RVMT
Y ENHANCER AND CHROMA ENCODER
IC400
Y ENHANCER
SEG CONTROL
DE-MULIPLEXER
CLOCK CONV
CHROMA ENCODER
YMR4-YMR7
YMR0-YMR3
CMR0-CMR3
C READ CLK GEN
YCK1
CCK1
USCO
BDR
TP620 (RCCK)
⑩
TP600 (CRCK)
⑩
Q710
IC710,711
BURST PULSE GEN
HPR0
HPR1
HPR2
RVMT
IC420
Y D/A CONV
Q20,210
Y AMP
FL10
LPF
Q10
BUFF
Q11
Y DELAY
Q12
BUFF
TP10 (Y OUT)
⑧
CNR Y(X)
CN702
VO.222-4
IC440
C D/A CONV
Q21,214
C AMP
FL30
BPF
Q30
BUFF
Q31
C DELAY
IC354,Q33
CHROMA MUTE
XMWE
CHROMA EXIST
Q32
BUFF
TP30 (C OUT)
⑨
CNR C(X)
CN702
VO.222-2
CNR SYNC
CN710
SS.134-13

Board No. 1-641-576-13

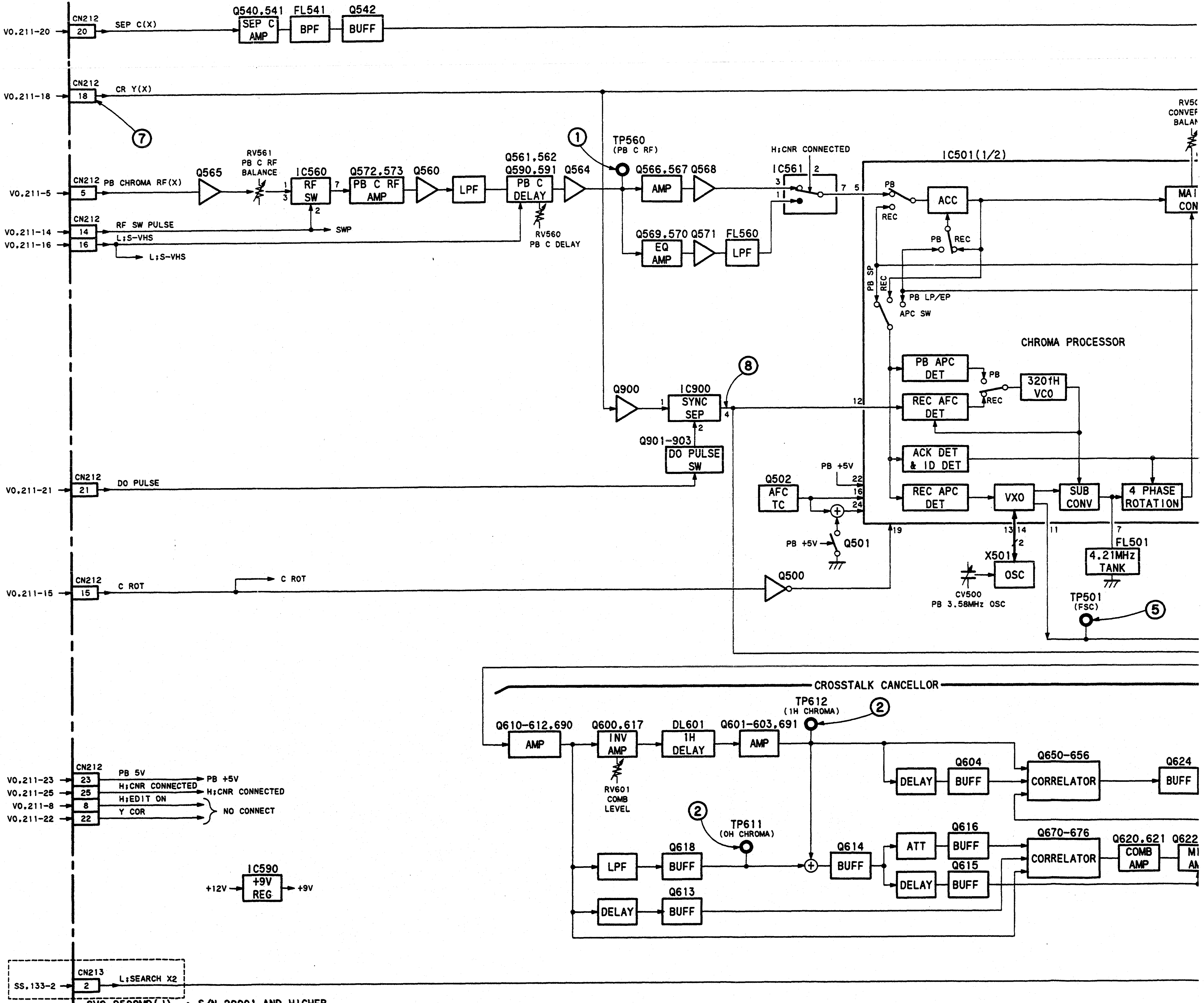
SVO-9500MD(J)	S/N 20001 and higher
SVO-9500MD(UC)	S/N 21201 and higher
SVO-9500MD4(UC)	S/N 12201 and higher

VM-12
SVO-9500MD (1)
SVO-9500MD4(1)

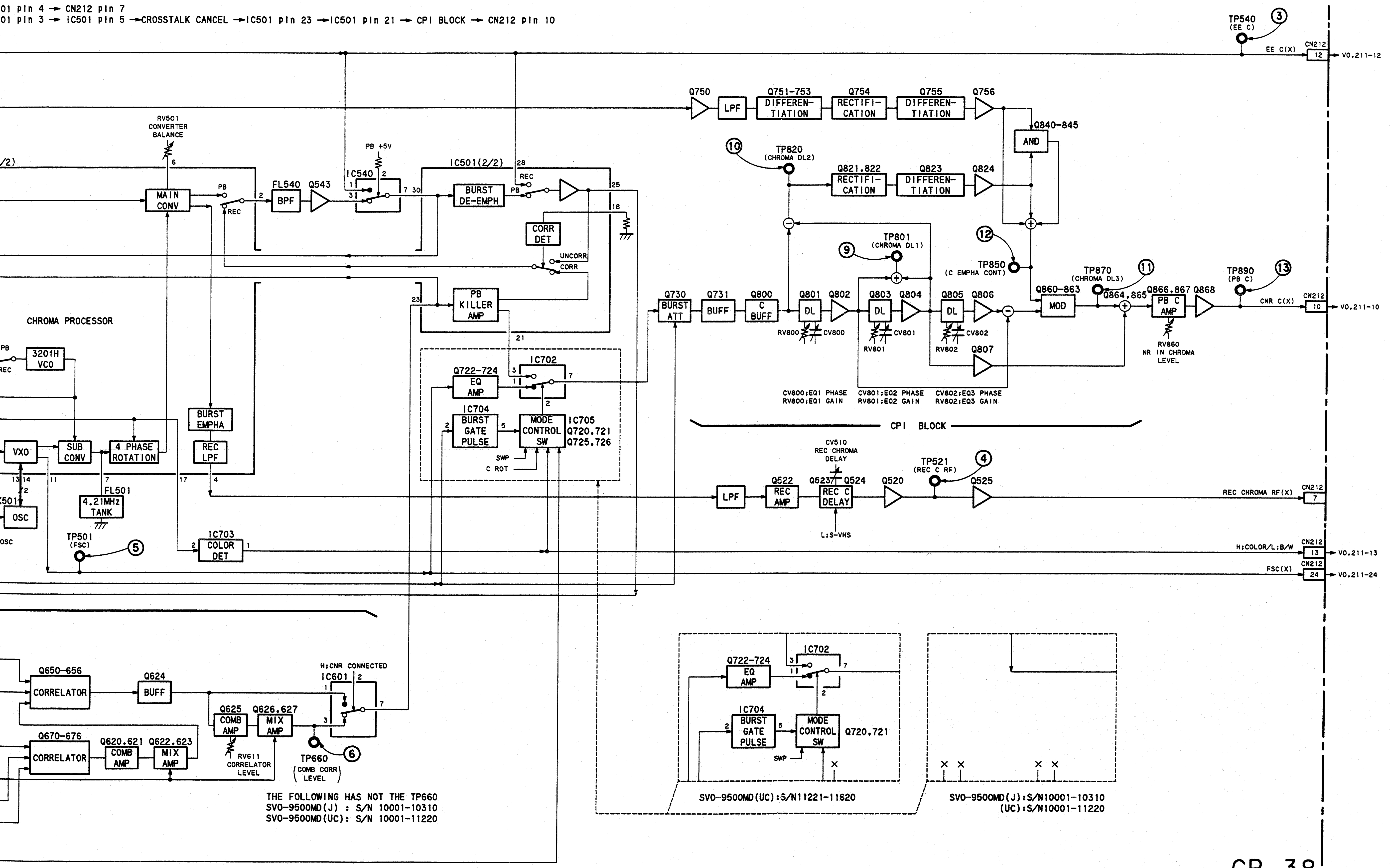
CHROMA PROCESS



Main flow of REC chroma : CN212 pin 20 →IC540 pin 1 → IC501 Acc → IC501 MAIN CONV →IC501 pin 4 → CN212 pin 7
Main flow of PB chroma : CN212 pin 5 →IC561 pin 3 → IC501 Acc → IC501 MAIN CONV →IC501 pin 3 → IC501 pin 5 →CROSST


CN212
VO.211-20
20
SEP C(X)
Q540,541
SEP C AMP
FL541
BPF
Q542
BUFF
VO.211-18
18
CR Y(X)
⑦
VO.211-5
5
PB CHROMA RF(X)
Q565
RV561 PB C RF BALANCE
IC560
RF SW
Q572,573
PB C RF AMP
Q560
LPF
Q561,562 Q590,591
PB C DELAY
Q564
RV560 PB C DELAY
①
TP560 (PB C RF)
Q566,567
AMP
Q568
Q569,570
EQ AMP
Q571
FL560
LPF
H;CNR CONNECTED
IC561
VO.211-14
14
RF SW PULSE
SWP
VO.211-16
16
L;S-VHS
L;S-VHS
IC501(1/2)
PB
REC
ACC
MAIN CONV
RV50 CONVER BALAN
PB SP
REC
PB LP/EP
APC SW
CHROMA PROCESSOR
PB APC DET
REC AFC DET
320fH VCO
ACK DET & ID DET
REC APC DET
VXO
SUB CONV
4 PHASE ROTATION
⑧
Q900
IC900
SYNC SEP
Q901-903
DO PULSE SW
VO.211-21
21
DO PULSE
Q502
AFC TC
PB +5V
Q501
Q500
VO.211-15
15
C ROT
C ROT
X501
OSC
CV500 PB 3.58MHz OSC
FL501
4.21MHz TANK
TP501 (FSC)
⑤
CROSSTALK CANCELLOR
TP612 (1H CHROMA)
②
Q610-612,690
AMP
Q600,617
INV AMP
RV601 COMB LEVEL
DL601
1H DELAY
Q601-603,691
AMP
DELAY
Q604
BUFF
Q650-656
CORRELATOR
Q624
BUFF
TP611 (0H CHROMA)
②
LPF
Q618
BUFF
Q614
BUFF
ATT
Q616
BUFF
Q615
DELAY
BUFF
Q670-676
CORRELATOR
Q620,621
COMB AMP
Q622
DELAY
Q613
BUFF
VO.211-23
VO.211-25
VO.211-8
VO.211-22
23
25
8
22
PB 5V
PB +5V
H;CNR CONNECTED
H;CNR CONNECTED
H;EDIT ON
Y COR
NO CONNECT
IC590
+12V
+9V REG
+9V
SS.133-2
CN213
2
L;SEARCH X2

SVO-9500MD(J) : S/N 20001 AND HIGHER
SVO-9500MD(UC) : S/N 20001 AND HIGHER
SVO-9500MD4(UC): S/N 10001 AND HIGHER

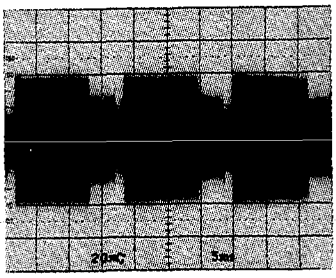

01 pin 4 → CN212 pin 7
01 pin 3 → IC501 pin 5 →CROSSTALK CANCEL →IC501 pin 23 →IC501 pin 21 → CPI BLOCK → CN212 pin 10
TP540 (EE C) ③
EE C(X)
CN212 12 → VO.211-12
Q750
LPF
Q751-753 DIFFERENTIATION
Q754 RECTIFICATION
Q755 DIFFERENTIATION
Q756
Q840-845
AND
RV501 CONVERTER BALANCE
PB +5V
IC501(2/2)
MAIN CONV
PB
REC
FL540 BPF
Q543
IC540
BURST DE-EMPH
CORR DET
UNCORR
CORR
PB KILLER AMP
⑩ TP820 (CHROMA DL2)
Q821,822 RECTIFICATION
Q823 DIFFERENTIATION
Q824
⑨ TP801 (CHROMA DL1)
⑫ TP850 (C EMPHA CONT)
TP870 (CHROMA DL3) ⑪
TP890 (PB C) ⑬
Q730 BURST ATT
Q731 BUFF
Q800 C BUFF
Q801 DL Q802
Q803 DL Q804
Q805 DL Q806
Q807
RV800 CV800
RV801 CV801
RV802 CV802
Q860-863 MOD
Q864,865
Q866,867 PB C AMP
Q868
RV860 NR IN CHROMA LEVEL
CNR C(X)
CN212 10 → VO.211-10
CV800:EQ1 PHASE RV800:EQ1 GAIN
CV801:EQ2 PHASE RV801:EQ2 GAIN
CV802:EQ3 PHASE RV802:EQ3 GAIN
CPI BLOCK
CHROMA PROCESSOR
3201fH VCO
Q722-724 EQ AMP
IC702
IC704 BURST GATE PULSE
MODE CONTROL SW
IC705 Q720,721 Q725,726
SWP
C ROT
BURST EMPHA
REC LPF
VXO
SUB CONV
4 PHASE ROTATION
FL501 4.21MHz TANK
OSC
TP501 (FSC) ⑤
IC703 COLOR DET
CV510 REC CHROMA DELAY
TP521 (REC C RF) ④
LPF
Q522 REC AMP
Q523 REC C DELAY Q524
L:S-VHS
Q520
Q525
REC CHROMA RF(X)
CN212 7
H:COLOR/L:B/W
CN212 13 → VO.211-13
FSC(X)
CN212 24 → VO.211-24
Q650-656 CORRELATOR
Q624 BUFF
H:CNR CONNECTED
IC601
Q625 COMB AMP
Q626,627 MIX AMP
RV611 CORRELATOR LEVEL
TP660 (COMB CORR LEVEL) ⑥
Q670-676 CORRELATOR
Q620,621 COMB AMP
Q622,623 MIX AMP
Q722-724 EQ AMP
IC702
IC704 BURST GATE PULSE
MODE CONTROL SW Q720,721
SWP
SVO-9500MD(UC):S/N11221-11620
SVO-9500MD(J):S/N10001-10310 (UC):S/N10001-11220

THE FOLLOWING HAS NOT THE TP660
SVO-9500MD(J) : S/N 10001-10310
SVO-9500MD(UC): S/N 10001-11220

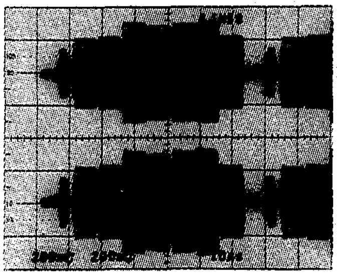
CR-38

SVO-9500MD(2)
SVP-9500MD4(1)

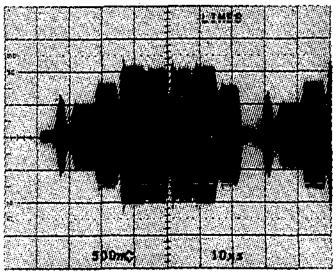
① TP560 (E-3 ∗) PB mode



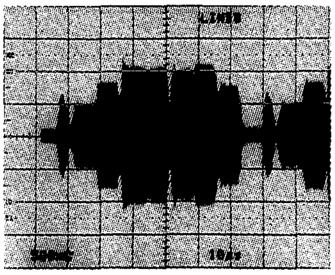
② TP611 (B-3 ∗) STOP (E-E) mode
TP612 (B-3 ∗) STOP (E-E) mode



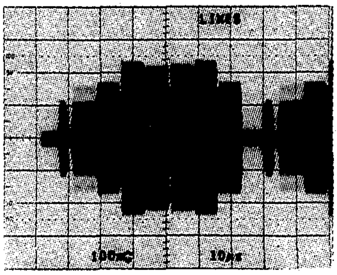
TP611 (B-3 ∗) PB mode



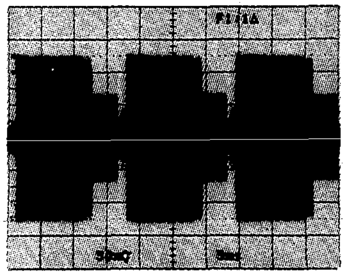
TP612 (B-3 ∗) PB mode



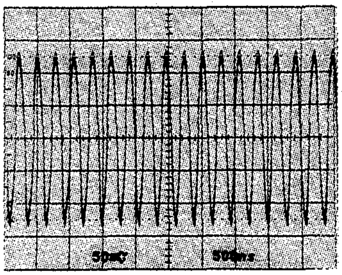
③ TP540 (D-2 ∗) STOP (E-E) mode



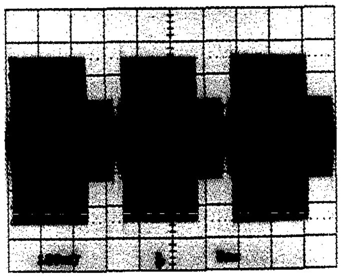
④ TP521 (G-2 ∗) REC mode



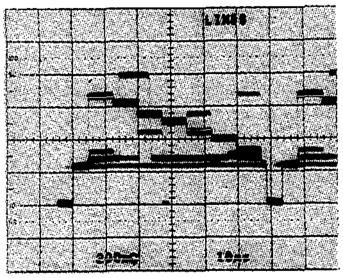
⑤ TP501 (E-3 ∗) STOP (E-E) mode



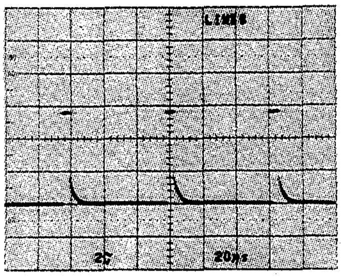
⑥ TP660 (A-2 ∗) PB mode



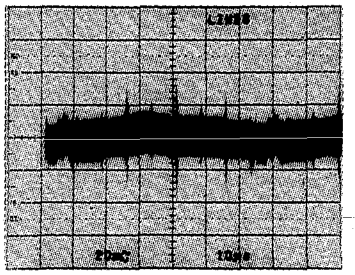
⑦ CN212 pin 18 (G-3) STOP (E-E) mode



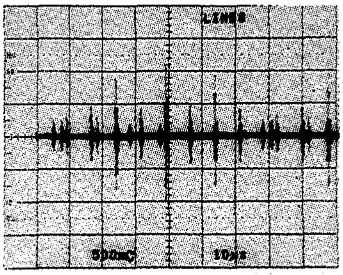
⑧ IC900 pin 4 (G-1) STOP (E-E) mode



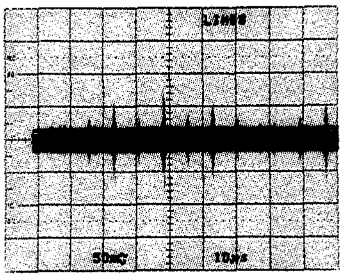
⑨ TP801 (F-2 ∗) STOP (E-E) mode



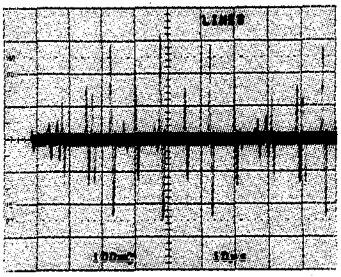
⑩ TP820 (C-1 ∗) STOP (E-E) mode



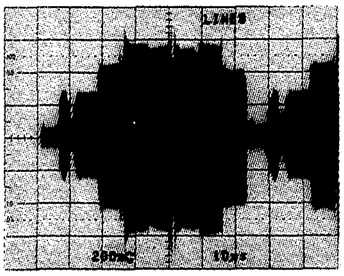
⑪ TP870 (F-1 ∗) STOP (E-E) mode



⑫ TP850 (E-1 ∗) STOP (E-E) mode



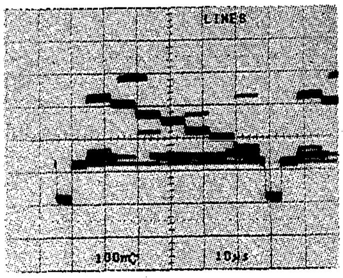
⑬ TP890 (G-1 ∗) PB mode



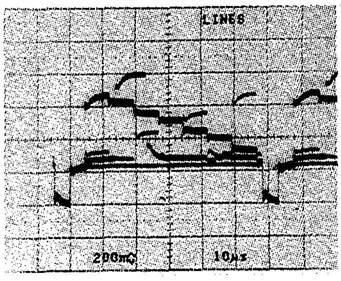
Measurement Condition
S-VIDEO IN: SMPTE color bars
REC mode: S-VHS
STOP (E-E) mode: S-VHS
PB mode: KRV-45HNS or KRV-51HN

∗ mark; B SIDE mount

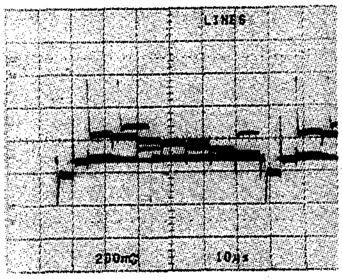
① TP203 (G-5*) STOP (E-E) mode



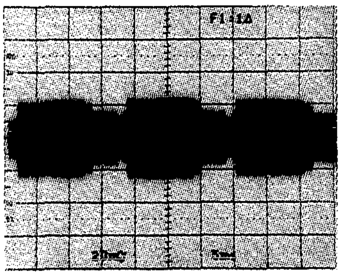
② TP201 (E-5*) PB mode



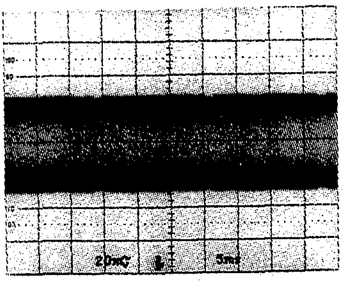
③ TP101 (K-3*) STOP (E-E) mode



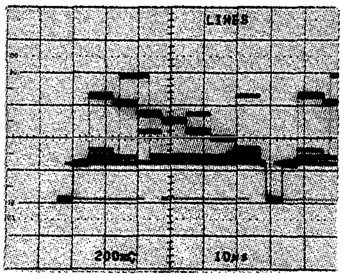
④ TP210 (J-1*) STOP (E-E) mode



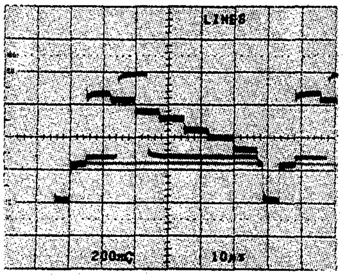
⑤ TP202 (L-1*) STOP (E-E) mode



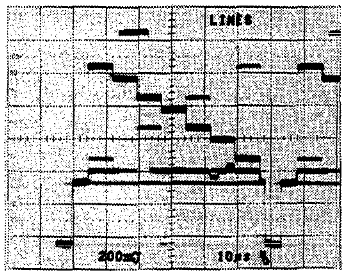
⑥ TP301 (C-5*) STOP (E-E) mode



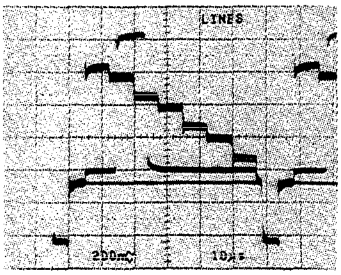
TP301 (C-5*) PB mode



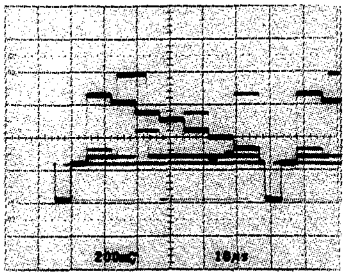
⑦ TP302 (A-5*) STOP (E-E) mode



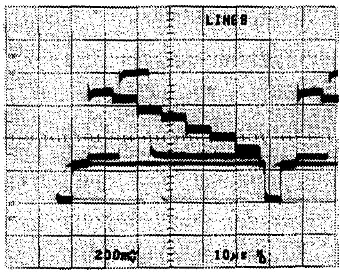
TP302 (A-5*) PB mode



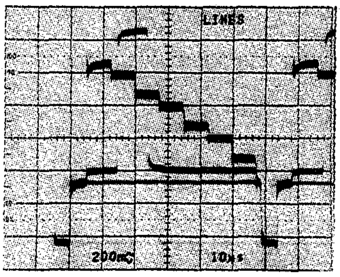
⑧ TP303 (D-4*) STOP (E-E) mode



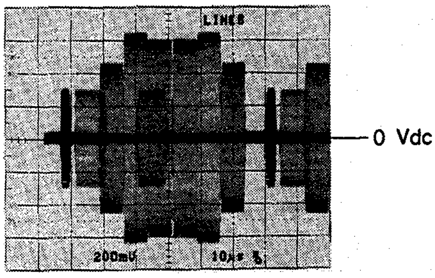
TP303 (D-4*) PB mode



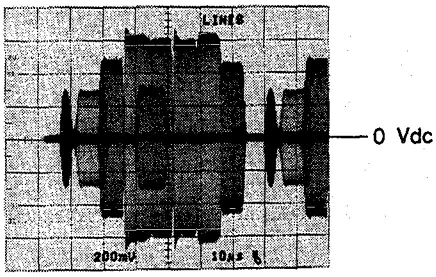
⑨ TP304 (D-2*) PB mode



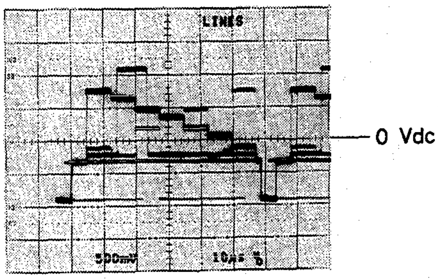
⑩ TP491 (H-1*) STOP (E-E) mode



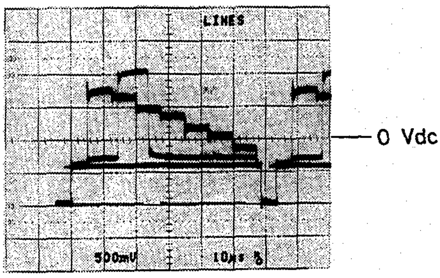
TP491 (H-1*) PB mode



⑪ TP492 (G-1*) STOP (E-E) mode



TP492 (H-1*) PB mode

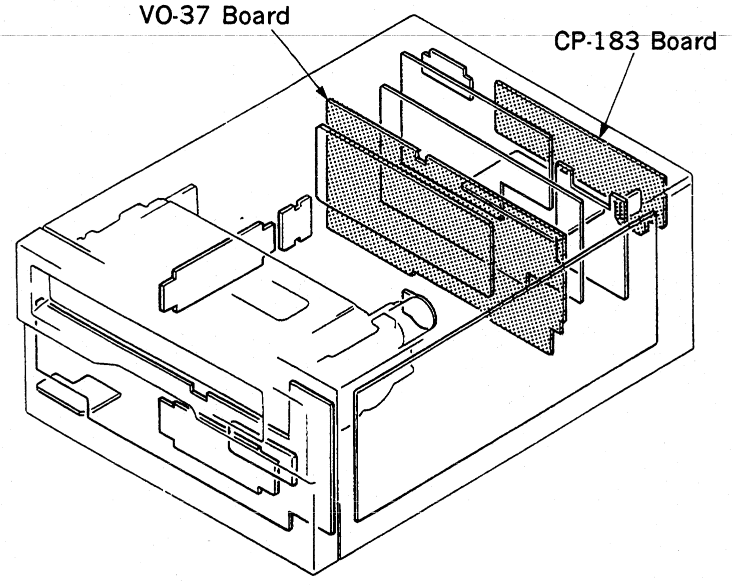


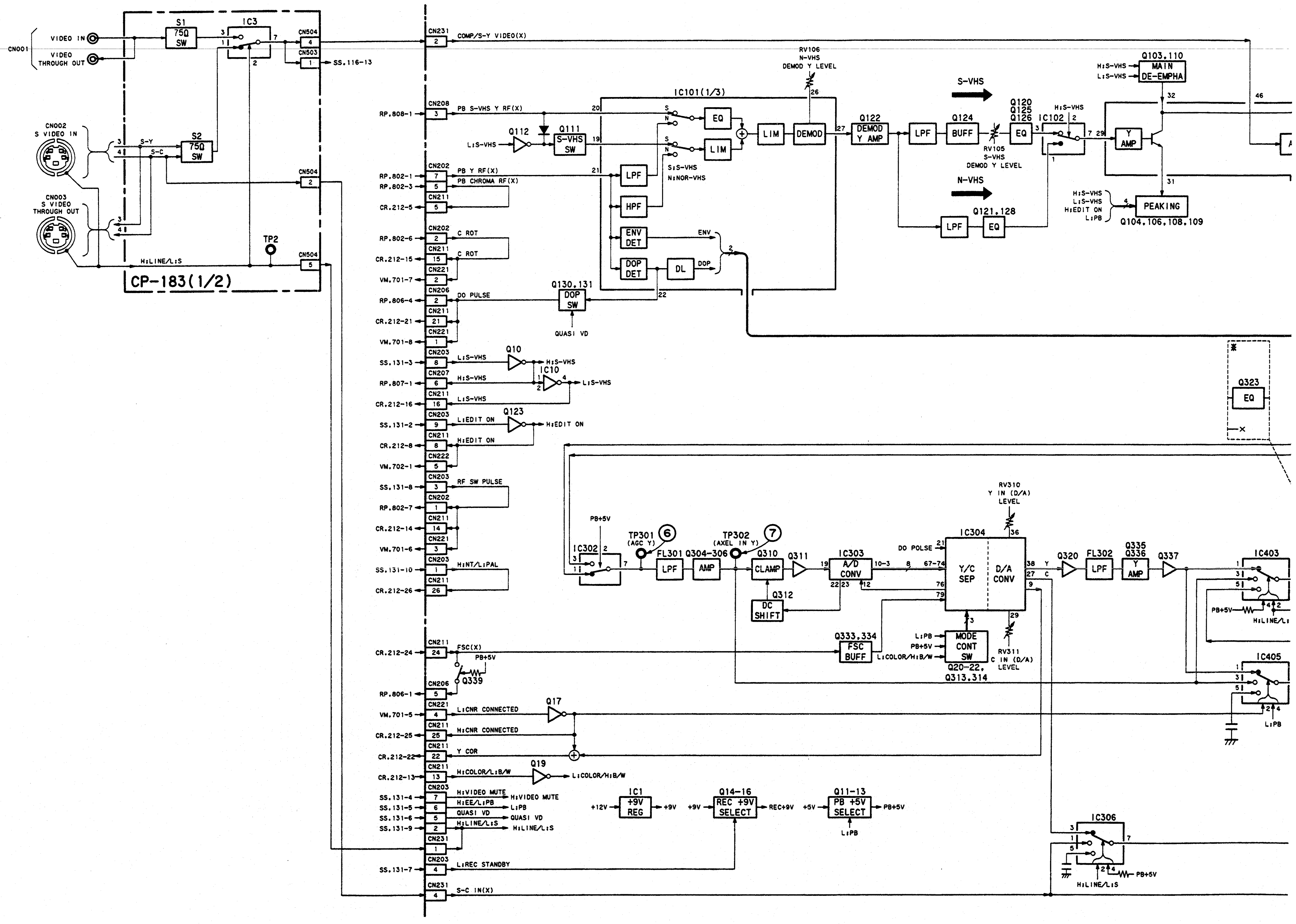
Measurement Condition

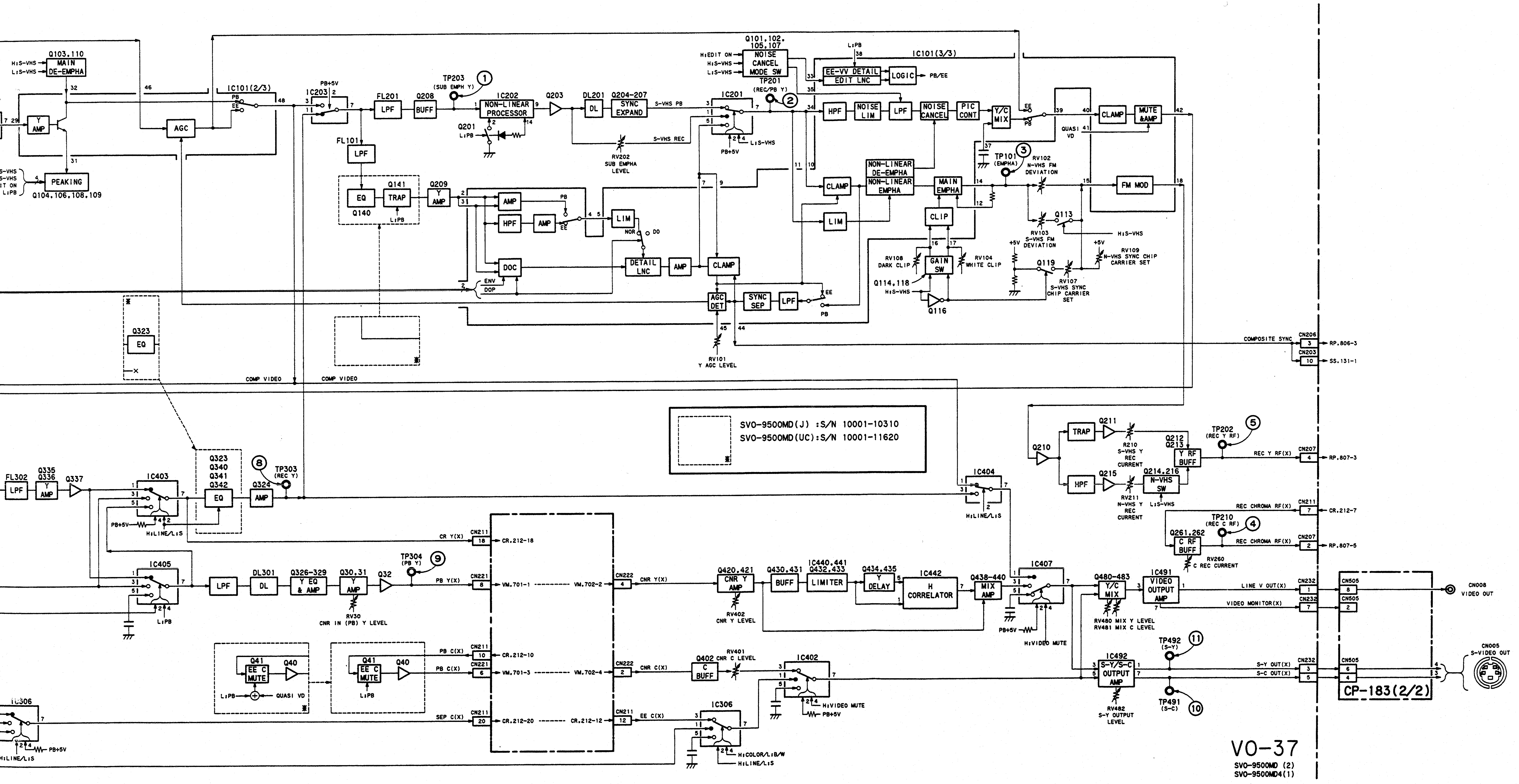
S-VIDEO IN: SMPTE color bars
STOP (E-E) mode: S-VHS
PB mode: KRV-45HNS or KRV-51HN

* mark; B SIDE mount

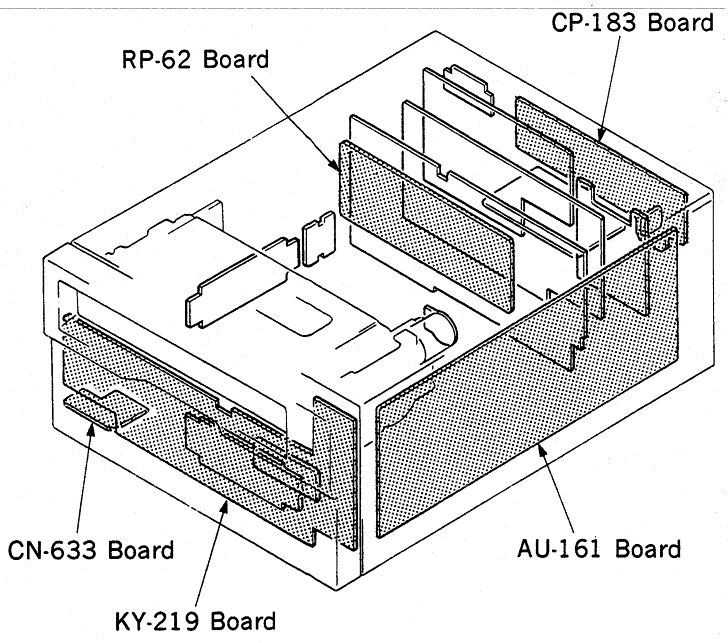
Y PROCESS, VIDEO OUT PROCESS

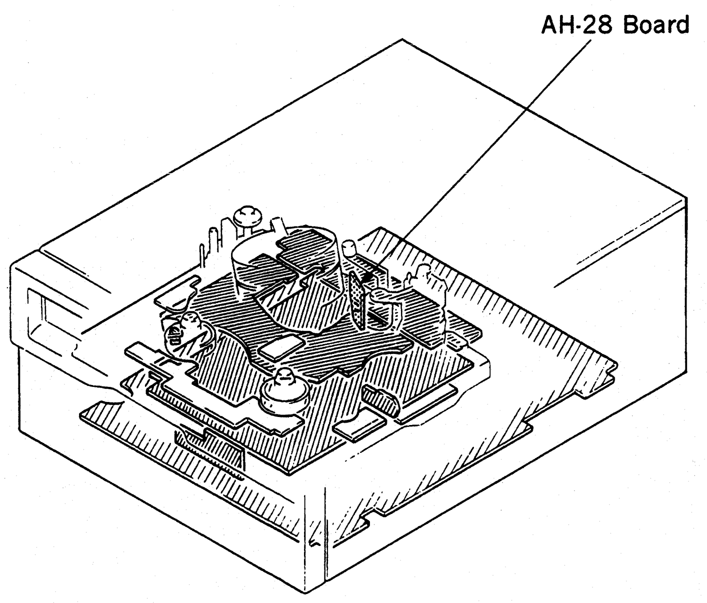

VO-37 Board
CP-183 Board

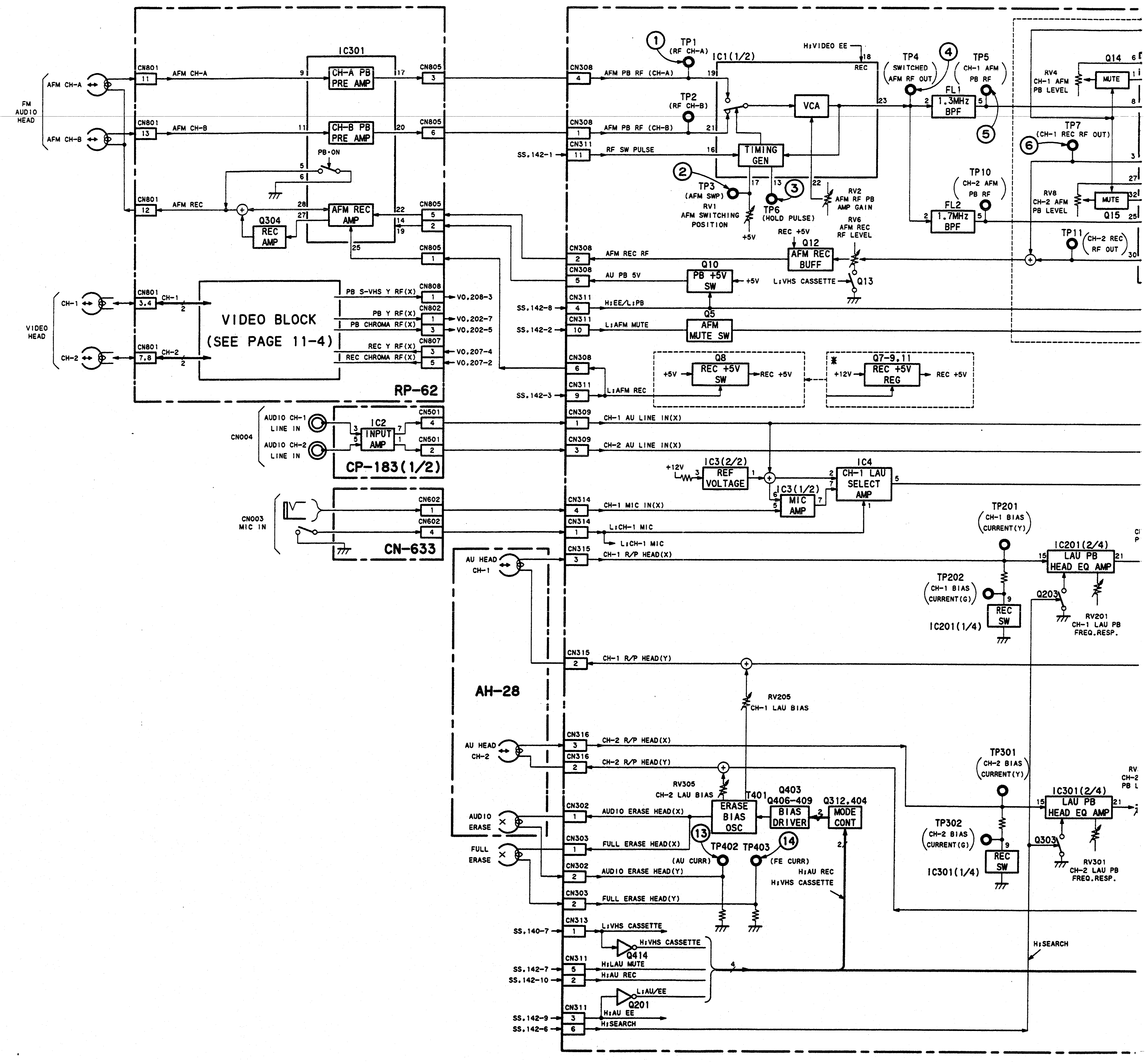

CN001
VIDEO IN
VIDEO THROUGH OUT
CN002 S VIDEO IN
CN003 S VIDEO THROUGH OUT
S1 75Ω SW
S2 75Ω SW
IC3
S-Y
S-C
TP2
H:LINE/L:S
CN504
CN503
SS.116-13
CP-183(1/2)
CN231
COMP/S-Y VIDEO(X)
CN208
PB S-VHS Y RF(X)
CN202
PB Y RF(X)
PB CHROMA RF(X)
C ROT
DO PULSE
L:S-VHS
H:S-VHS
L:EDIT ON
H:EDIT ON
RF SW PULSE
H:NT/L:PAL
FSC(X)
PB+5V
Q339
L:CNR CONNECTED
H:CNR CONNECTED
Y COR
H:COLOR/L:B/W
L:COLOR/H:B/W
H:VIDEO MUTE
H:EE/L:PB
QUASI VD
H:LINE/L:S
L:REC STANDBY
S-C IN(X)
RP.808-1
RP.802-1
RP.802-3
CR.212-5
RP.802-6
CR.212-15
VM.701-7
RP.806-4
CR.212-21
VM.701-8
SS.131-3
RP.807-1
CR.212-16
SS.131-2
CR.212-8
VM.702-1
SS.131-8
RP.802-7
CR.212-14
VM.701-6
SS.131-10
CR.212-26
CR.212-24
RP.806-1
VM.701-5
CR.212-25
CR.212-22
CR.212-13
SS.131-4
SS.131-5
SS.131-6
SS.131-9
SS.131-7
IC101(1/3)
Q112
Q111 S-VHS SW
EQ
LIM
DEMOD
LPF
HPF
ENV DET
DOP DET
DL
S:S-VHS
N:NOR-VHS
RV106 N-VHS DEMOD Y LEVEL
Q122 DEMOD Y AMP
Q124 BUFF
RV105 S-VHS DEMOD Y LEVEL
Q120 Q125 Q126
IC102
S-VHS
N-VHS
Q121,128
Y AMP
Q103,110 MAIN DE-EMPHA
PEAKING
Q104,106,108,109
Q130,131 DOP SW
QUASI VD
Q10
IC10
Q123
Q323 EQ
IC302
TP301 (AGC Y) ⑥
FL301
Q304-306 AMP
TP302 (AXEL IN Y) ⑦
Q310 CLAMP
Q311
Q312 DC SHIFT
IC303 A/D CONV
IC304 Y/C SEP D/A CONV
RV310 Y IN (D/A) LEVEL
RV311 C IN (D/A) LEVEL
DO POLSE
Q333,334 FSC BUFF
MODE CONT SW
Q20-22, Q313,314
Q320
FL302 LPF
Q335 Q336 Y AMP
Q337
IC403
IC405
IC306
Q17
Q19
IC1 +9V REG
Q14-16 REC +9V SELECT
Q11-13 PB +5V SELECT
+12V
+9V
REC+9V
+5V
PB+5V
L:PB

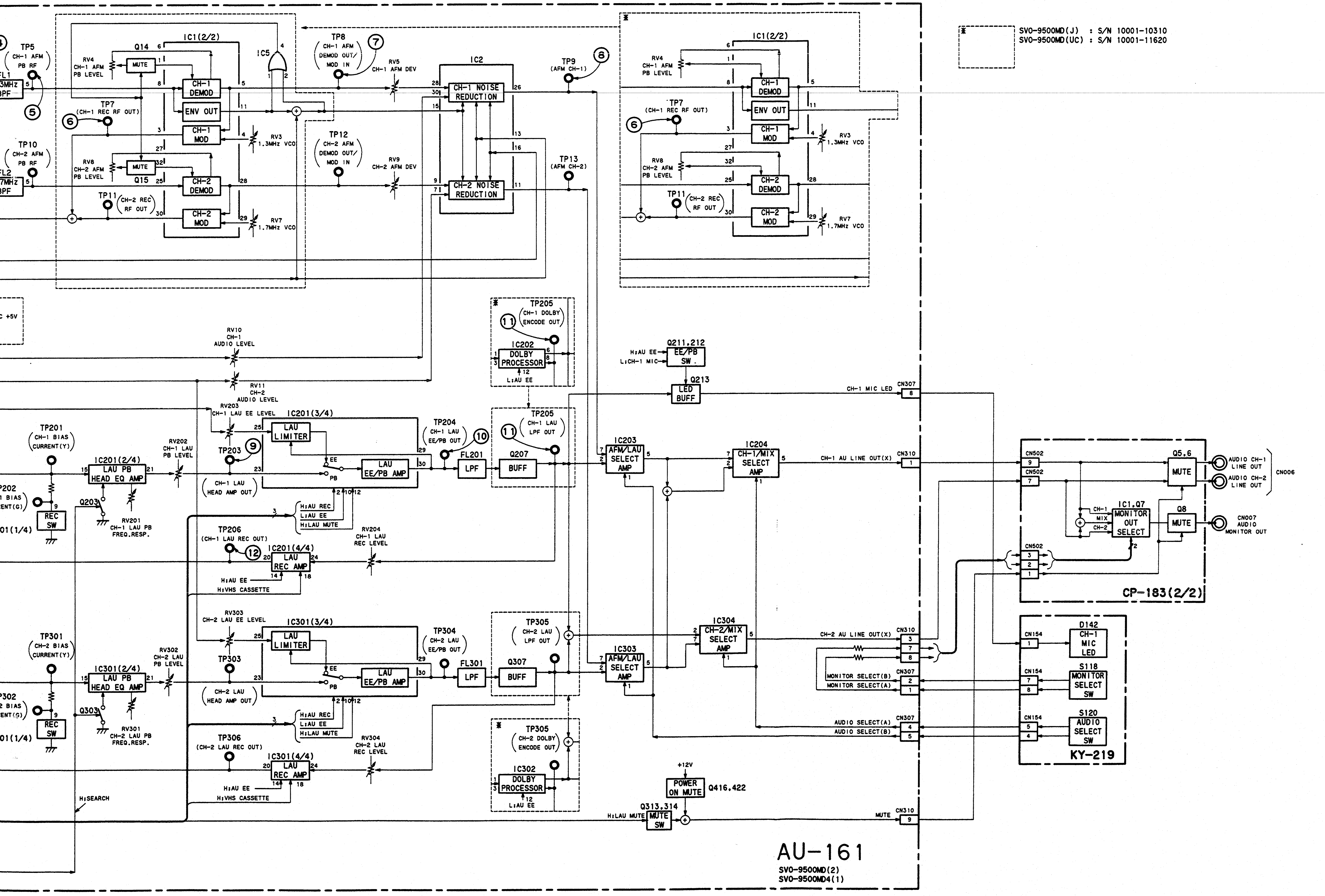

Q103,110
MAIN DE-EMPHA
H:S-VHS
L:S-VHS
Y AMP
PEAKING
Q104,106,108,109
AGC
IC101(2/3)
PB
EE
IC203
PB+5V
FL201
LPF
Q208
BUFF
TP203
(SUB EMPH Y)
①
IC202
NON-LINEAR PROCESSOR
Q201
L:PB
Q203
DL201
DL
Q204-207
SYNC EXPAND
S-VHS PB
S-VHS REC
RV202
SUB EMPHA LEVEL
FL101
LPF
EQ
Q140
Q141
TRAP
L:PB
Q209
Y AMP
AMP
HPF
AMP
PB
EE
LIM
NOR
DO
DOC
DETAIL LNC
AMP
CLAMP
ENV
DOP
AGC DET
SYNC SEP
LPF
EE
PB
RV101
Y AGC LEVEL
IC201
PB+5V
L:S-VHS
Q101,102,105,107
H:EDIT ON
H:S-VHS
L:S-VHS
NOISE CANCEL MODE SW
TP201
(REC/PB Y)
②
L:PB
IC101(3/3)
EE-VV DETAIL
EDIT LNC
LOGIC
PB/EE
HPF
NOISE LIM
LPF
NOISE CANCEL
PIC CONT
Y/C MIX
EE
PB
CLAMP
MUTE &AMP
QUASI VD
NON-LINEAR DE-EMPHA
NON-LINEAR EMPHA
CLAMP
LIM
MAIN EMPHA
TP101
(EMPHA)
③
RV102
N-VHS FM DEVIATION
FM MOD
CLIP
RV108
DARK CLIP
GAIN SW
RV104
WHITE CLIP
Q114,118
H:S-VHS
Q116
RV103
S-VHS FM DEVIATION
Q113
H:S-VHS
+5V
Q119
RV107
S-VHS SYNC CHIP CARRIER SET
RV109
N-VHS SYNC CHIP CARRIER SET
Q323
EQ
COMP VIDEO
COMPOSITE SYNC
CN206
RP.806-3
CN203
SS.131-1
SVO-9500MD(J) :S/N 10001-10310
SVO-9500MD(UC):S/N 10001-11620
Q210
TRAP
Q211
HPF
Q215
R210
S-VHS Y REC CURRENT
RV211
N-VHS Y REC CURRENT
Q212 Q213
Y RF BUFF
Q214,216
N-VHS SW
L:S-VHS
TP202
(REC Y RF)
⑤
REC Y RF(X)
CN207
RP.807-3
REC CHROMA RF(X)
CN211
CR.212-7
TP210
(REC C RF)
④
Q261,262
C RF BUFF
RV260
C REC CURRENT
RP.807-5
FL302
LPF
Q335 Q336
Y AMP
Q337
IC403
PB+5V
H:LINE/L:S
Q323 Q340 Q341 Q342
EQ
⑧
TP303
(REC Y)
Q324
AMP
IC404
H:LINE/L:S
CR Y(X)
CN211
CR.212-18
IC405
L:PB
LPF
DL301
DL
Q326-329
Y EQ & AMP
Q30,31
Y AMP
Q32
TP304
(PB Y)
⑨
RV30
CNR IN (PB) Y LEVEL
PB Y(X)
CN221
VM.701-1
VM.702-2
CN222
CNR Y(X)
Q420,421
CNR Y AMP
RV402
CNR Y LEVEL
Q430,431
BUFF
IC440,441 Q432,433
LIMITER
Q434,435
Y DELAY
IC442
H CORRELATOR
Q438-440
MIX AMP
IC407
PB+5V
H:VIDEO MUTE
Q480-483
Y/C MIX
RV480 MIX Y LEVEL
RV481 MIX C LEVEL
IC491
VIDEO OUTPUT AMP
LINE V OUT(X)
VIDEO MONITOR(X)
CN232
CN505
CN008
VIDEO OUT
Q41
EE C MUTE
Q40
L:PB
QUASI VD
PB C(X)
CR.212-10
VM.701-3
VM.702-4
CNR C(X)
Q402
C BUFF
RV401
CNR C LEVEL
IC402
H:VIDEO MUTE
PB+5V
TP492
(S-Y)
⑪
IC492
S-Y/S-C OUTPUT AMP
RV482
S-Y OUTPUT LEVEL
S-Y OUT(X)
S-C OUT(X)
TP491
(S-C)
⑩
CN005
S-VIDEO OUT
CP-183(2/2)
IC306
H:LINE/L:S
PB+5V
SEP C(X)
CR.212-20
CR.212-12
EE C(X)
IC306
H:COLOR/L:B/W
H:LINE/L:S
VO-37
SVO-9500MD (2)
SVO-9500MD4(1)

AFM PROCESS/NORMAL AUDIO PROCESS


RP-62 Board
CP-183 Board
CN-633 Board
KY-219 Board
AU-161 Board

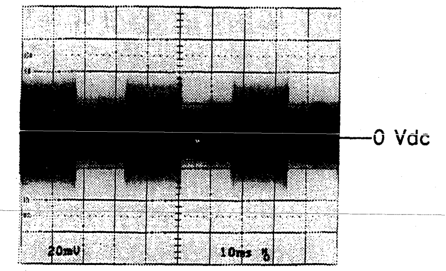



FM AUDIO HEAD
AFM CH-A
AFM CH-B
CN801
IC301
CH-A PB PRE AMP
CH-B PB PRE AMP
PB-ON
AFM REC AMP
Q304 REC AMP
AFM REC
CN805
VIDEO HEAD
CH-1
CH-2
VIDEO BLOCK (SEE PAGE 11-4)
PB S-VHS Y RF(X)
PB Y RF(X)
PB CHROMA RF(X)
REC Y RF(X)
REC CHROMA RF(X)
CN808
CN802
CN807
VO.208-3
VO.202-7
VO.202-5
VO.207-4
VO.207-2
RP-62
CN004
AUDIO CH-1 LINE IN
AUDIO CH-2 LINE IN
IC2 INPUT AMP
CN501
CP-183(1/2)
CN003 MIC IN
CN602
CN-633
AU HEAD CH-1
AU HEAD CH-2
AH-28
AUDIO ERASE
FULL ERASE
SS.142-1
SS.142-8
SS.142-2
SS.142-3
SS.140-7
SS.142-7
SS.142-10
SS.142-9
SS.142-6
CN308
CN311
CN309
CN314
CN315
CN316
CN302
CN303
CN313
AFM PB RF (CH-A)
AFM PB RF (CH-B)
RF SW PULSE
AFM REC RF
AU PB 5V
H:EE/L:PB
L:AFM MUTE
L:AFM REC
CH-1 AU LINE IN(X)
CH-2 AU LINE IN(X)
CH-1 MIC IN(X)
L:CH-1 MIC
CH-1 R/P HEAD(X)
CH-1 R/P HEAD(Y)
CH-2 R/P HEAD(X)
CH-2 R/P HEAD(Y)
AUDIO ERASE HEAD(X)
FULL ERASE HEAD(X)
AUDIO ERASE HEAD(Y)
FULL ERASE HEAD(Y)
L:VHS CASSETTE
H:VHS CASSETTE
H:LAU MUTE
H:AU REC
L:AU/EE
H:AU EE
H:SEARCH
Q414
Q201
① TP1 (RF CH-A)
TP2 (RF CH-B)
IC1(1/2)
H:VIDEO EE
REC
VCA
TIMING GEN
② TP3 (AFM SWP)
RV1 AFM SWITCHING POSITION
③ TP6 (HOLD PULSE)
RV2 AFM RF PB AMP GAIN
REC +5V
Q12 AFM REC BUFF
RV6 AFM REC RF LEVEL
Q13
L:VHS CASSETTE
Q10 PB +5V SW
Q5 AFM MUTE SW
Q8 REC +5V SW
Q7-9,11 REC +5V REG
+12V
④ TP4 (SWITCHED AFM RF OUT)
⑤ TP5 (CH-1 AFM PB RF)
FL1 1.3MHz BPF
FL2 1.7MHz BPF
TP10 (CH-2 AFM PB RF)
⑥ TP7 (CH-1 REC RF OUT)
TP11 (CH-2 REC RF OUT)
RV4 CH-1 AFM PB LEVEL
RV8 CH-2 AFM PB LEVEL
Q14 MUTE
Q15 MUTE
IC3(2/2) REF VOLTAGE
IC3(1/2) MIC AMP
IC4 CH-1 LAU SELECT AMP
TP201 (CH-1 BIAS CURRENT(Y))
TP202 (CH-1 BIAS CURRENT(G))
IC201(2/4) LAU PB HEAD EQ AMP
IC201(1/4) REC SW
Q203
RV201 CH-1 LAU PB FREQ.RESP.
RV205 CH-1 LAU BIAS
RV305 CH-2 LAU BIAS
T401 ERASE BIAS OSC
Q403 Q406-409 BIAS DRIVER
Q312,404 MODE CONT
⑬ TP402 (AU CURR)
⑭ TP403 (FE CURR)
H:AU REC
H:VHS CASSETTE
TP301 (CH-2 BIAS CURRENT(Y))
TP302 (CH-2 BIAS CURRENT(G))
IC301(2/4) LAU PB HEAD EQ AMP
IC301(1/4) REC SW
Q303
RV301 CH-2 LAU PB FREQ.RESP.
H:SEARCH

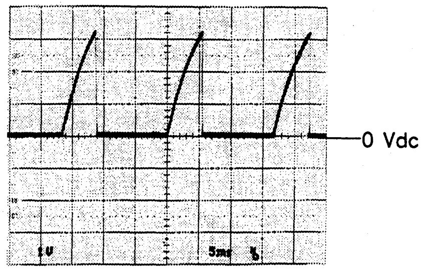

TP5 (CH-1 AFM PB RF)
TP7 (CH-1 REC RF OUT)
TP10 (CH-2 AFM PB RF)
TP11 (CH-2 REC RF OUT)
RV4 CH-1 AFM PB LEVEL
RV8 CH-2 AFM PB LEVEL
Q14
Q15
MUTE
IC1(2/2)
CH-1 DEMOD
ENV OUT
CH-1 MOD
CH-2 DEMOD
CH-2 MOD
RV3 1.3MHz VCO
RV7 1.7MHz VCO
IC5
TP8 (CH-1 AFM DEMOD OUT/ MOD IN)
TP12 (CH-2 AFM DEMOD OUT/ MOD IN)
RV5 CH-1 AFM DEV
RV9 CH-2 AFM DEV
IC2
CH-1 NOISE REDUCTION
CH-2 NOISE REDUCTION
TP9 (AFM CH-1)
TP13 (AFM CH-2)
RV10 CH-1 AUDIO LEVEL
RV11 CH-2 AUDIO LEVEL
TP205 (CH-1 DOLBY ENCODE OUT)
IC202 DOLBY PROCESSOR
L:AU EE
TP205 (CH-1 LAU LPF OUT)
Q211,212 EE/PB SW
H:AU EE
L:CH-1 MIC
Q213 LED BUFF
CH-1 MIC LED
CN307
TP201 (CH-1 BIAS CURRENT(Y))
IC201(2/4) LAU PB HEAD EQ AMP
RV203 CH-1 LAU EE LEVEL
IC201(3/4) LAU LIMITER
RV202 CH-1 LAU PB LEVEL
TP203 (CH-1 LAU HEAD AMP OUT)
LAU EE/PB AMP
EE
PB
TP204 (CH-1 LAU EE/PB OUT)
FL201 LPF
Q207 BUFF
IC203 AFM/LAU SELECT AMP
IC204 CH-1/MIX SELECT AMP
CH-1 AU LINE OUT(X)
CN310
Q203
REC SW
RV201 CH-1 LAU PB FREQ.RESP.
H:AU REC
L:AU EE
H:LAU MUTE
RV204 CH-1 LAU REC LEVEL
TP206 (CH-1 LAU REC OUT)
IC201(4/4) LAU REC AMP
H:AU EE
H:VHS CASSETTE
TP301 (CH-2 BIAS CURRENT(Y))
IC301(2/4) LAU PB HEAD EQ AMP
RV303 CH-2 LAU EE LEVEL
IC301(3/4) LAU LIMITER
RV302 CH-2 LAU PB LEVEL
TP303 (CH-2 LAU HEAD AMP OUT)
TP304 (CH-2 LAU EE/PB OUT)
FL301 LPF
Q307 BUFF
TP305 (CH-2 LAU LPF OUT)
IC303 AFM/LAU SELECT AMP
IC304 CH-2/MIX SELECT AMP
CH-2 AU LINE OUT(X)
MONITOR SELECT(B)
MONITOR SELECT(A)
AUDIO SELECT(A)
AUDIO SELECT(B)
Q303
RV301 CH-2 LAU PB FREQ.RESP.
RV304 CH-2 LAU REC LEVEL
TP306 (CH-2 LAU REC OUT)
IC301(4/4) LAU REC AMP
TP305 (CH-2 DOLBY ENCODE OUT)
IC302 DOLBY PROCESSOR
H:SEARCH
+12V
POWER ON MUTE
Q416,422
Q313,314 MUTE SW
H:LAU MUTE
MUTE
AU-161
SVO-9500MD(2)
SVO-9500MD4(1)
CN502
Q5,6 MUTE
AUDIO CH-1 LINE OUT
AUDIO CH-2 LINE OUT
CN006
IC1,Q7 MONITOR OUT SELECT
CH-1 MIX CH-2
Q8 MUTE
CN007 AUDIO MONITOR OUT
CP-183(2/2)
CN154
D142 CH-1 MIC LED
S118 MONITOR SELECT SW
S120 AUDIO SELECT SW
KY-219

* SVO-9500MD(J) : S/N 10001-10310
SVO-9500MD(UC) : S/N 10001-11620

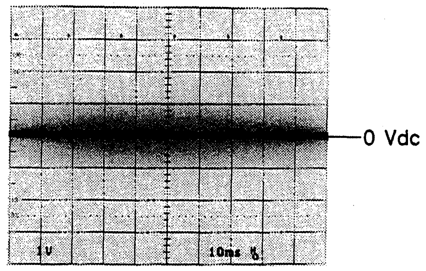
① TP1 (A-3) PB mode (A)



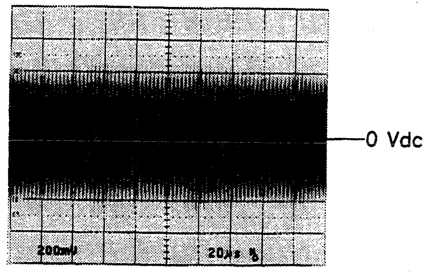
② TP3 (A-2) PB mode (A)



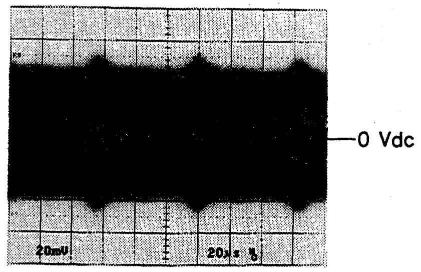
③ TP6 (A-1) PB mode (A)



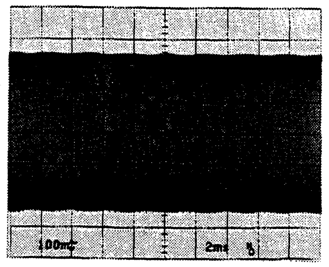
④ TP4 (B-2) PB mode (A)



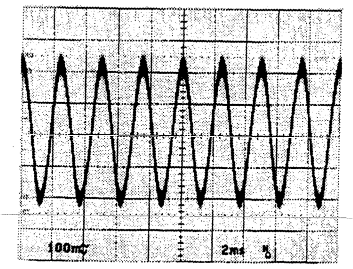
⑤ TP5 (A-1) PB mode (A)



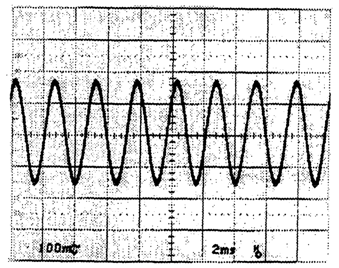
⑥ TP7 (B-2) STOP (E-E) mode



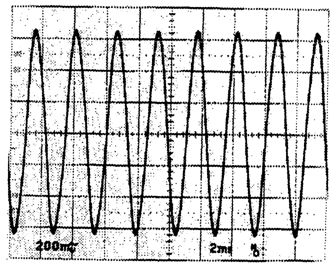
⑦ TP8 (A-1) PB mode (A)



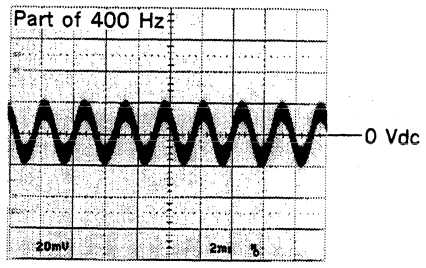
TP8 (A-1) REC mode



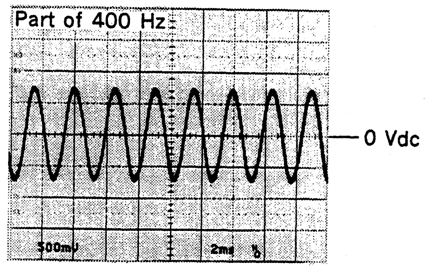
⑧ TP9 (C-1) STOP (E-E) mode



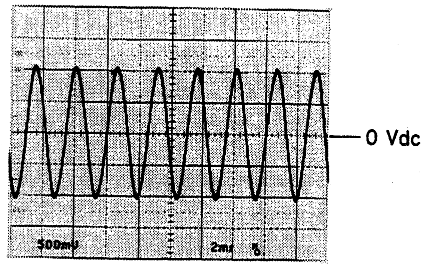
⑨ TP203 (J-3/2) PB mode (L)



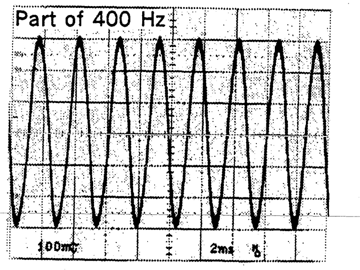
⑩ TP204 (I-2/K-4) PB mode (L)



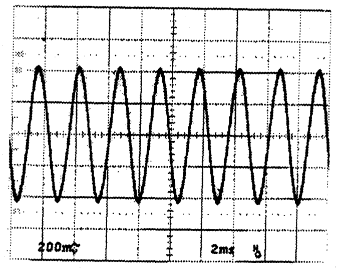
TP204 (I-2/K-4) STOP (E-E) mode



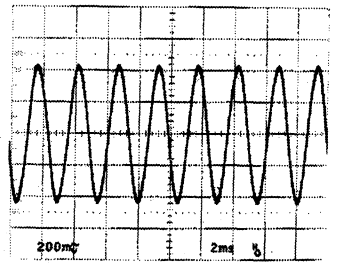
⑪ TP205 (J-1/4) PB mode (L)



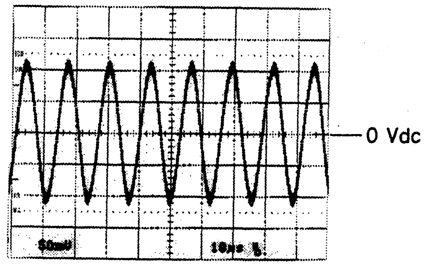
TP205 (J-1/4) STOP (E-E) mode



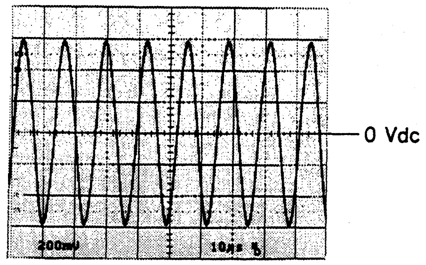
⑫ TP206 (J-2/K-1) STOP (E-E) mode



⑬ TP402 (L-4) REC mode

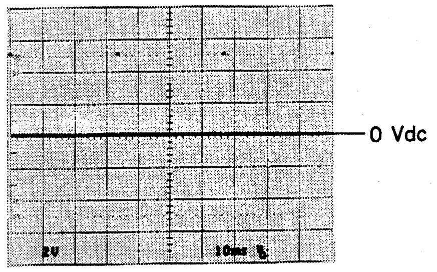


⑭ TP403 (L-4) REC mode

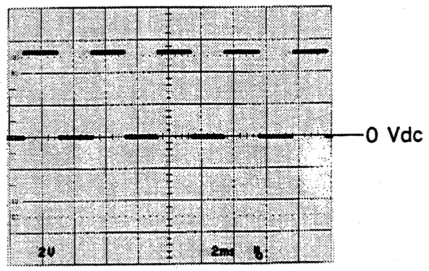


Measurement Condition
CH-1, AUDIO IN: 400 Hz, −10 dBu
STOP (E-E) mode: N-VHS
REC mode: N-VHS
PB mode (A): KRV-45NS or KRV-35NF
PB mode (L): KRV-45NS or KRV-31NS

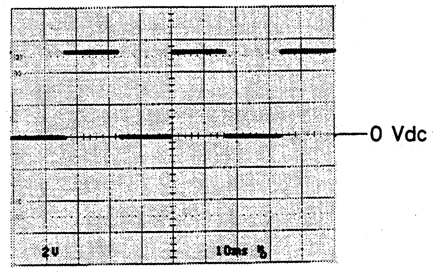
① TP104 (G-3) PB mode



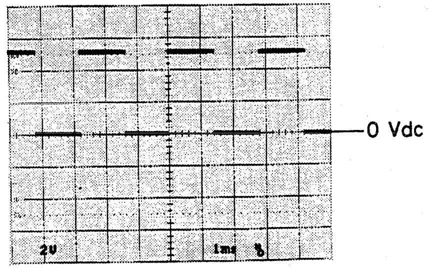
② TP110 (G-8) PB mode



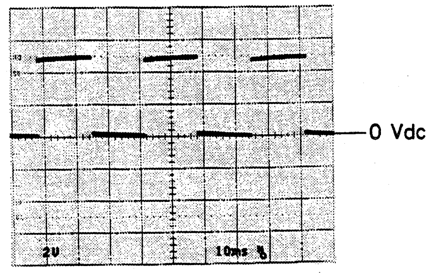
③ TP111 (L-7) PB mode



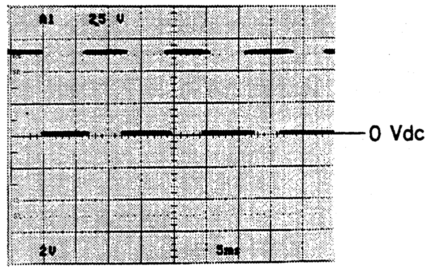
④ TP113 (G-3) PB mode



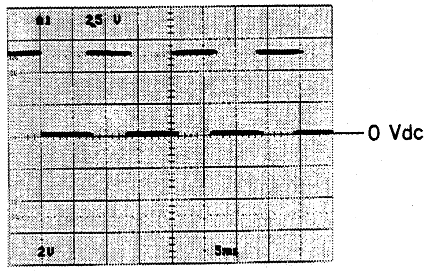
⑤ TP115 (K-4) PB mode



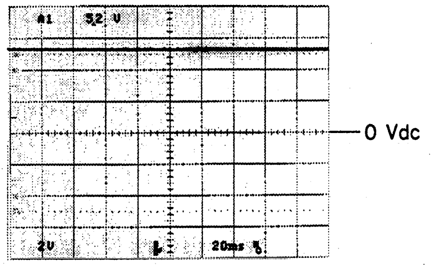
⑥ CN151 pin 4 (A-5) PB mode



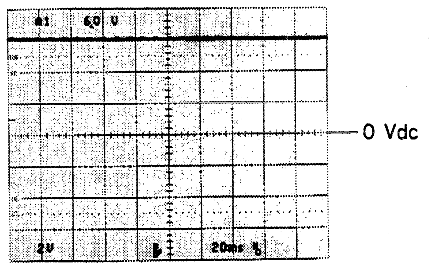
⑦ CN151 pin 5 (A-5) PB mode



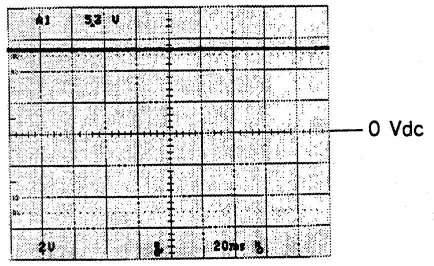
⑧ TP314 (C-2) PB mode



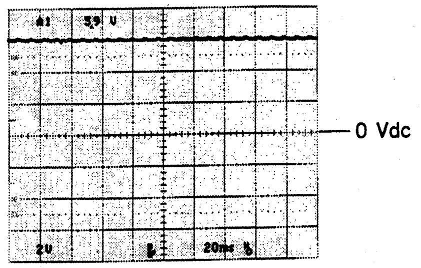
⑨ TP313 (D-3) PB mode



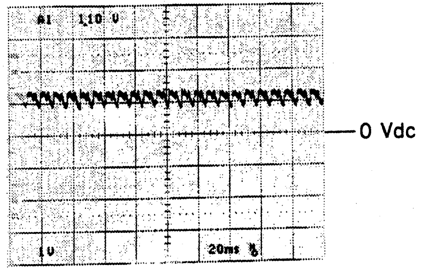
⑩ TP305 (B-3) PB mode



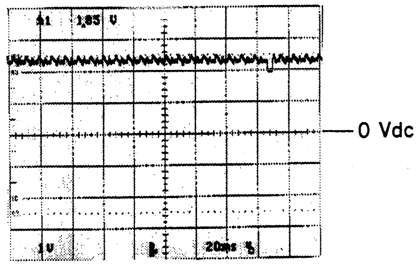
⑪ TP307 (C-2) PB mode



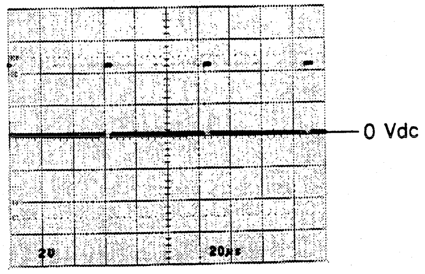
⑫ TP306 (B-2) PB mode



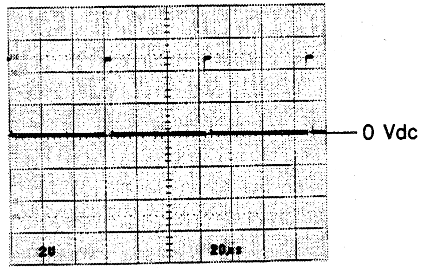
⑬ TP308 (B-3) PB mode



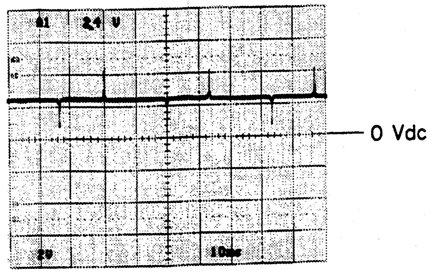
⑭ CN134 pin 13 (E-9) STOP (E-E) mode



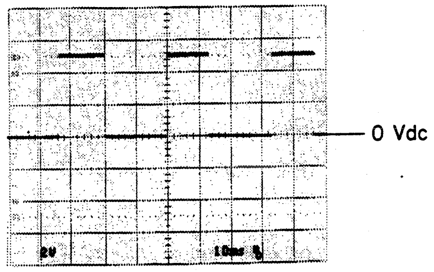
⑮ CN131 pin 1 (L-4) STOP (E-E) mode



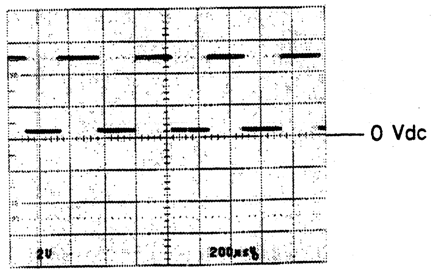
⑯ TP500 [DUS-534 (C-1)/SS-49 (F-3)]
PB mode



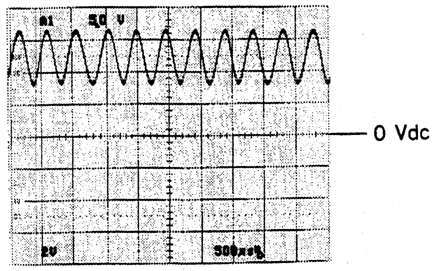
⑰ CN116 pin 11 (L-1) PB mode



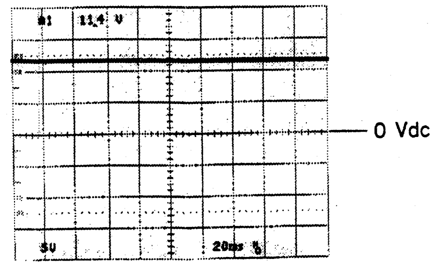
⑱ TP103 (K-9) PB mode



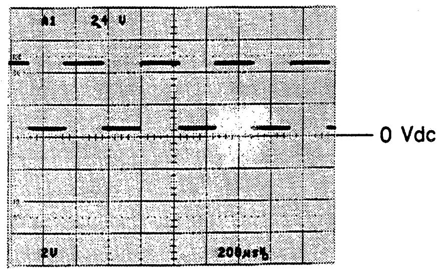
⑲ TP503 (K-9) PB mode



⑳ TP504 (K-9) PB mode



㉑ TP505 (K-9/L-9) PB mode



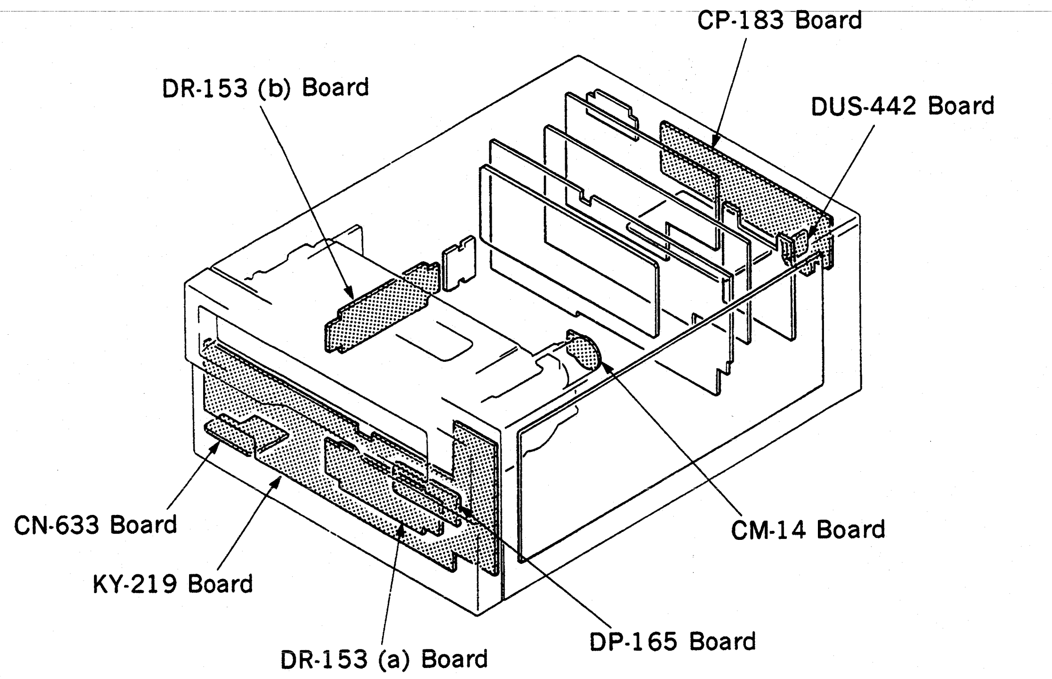
Measurement Condition

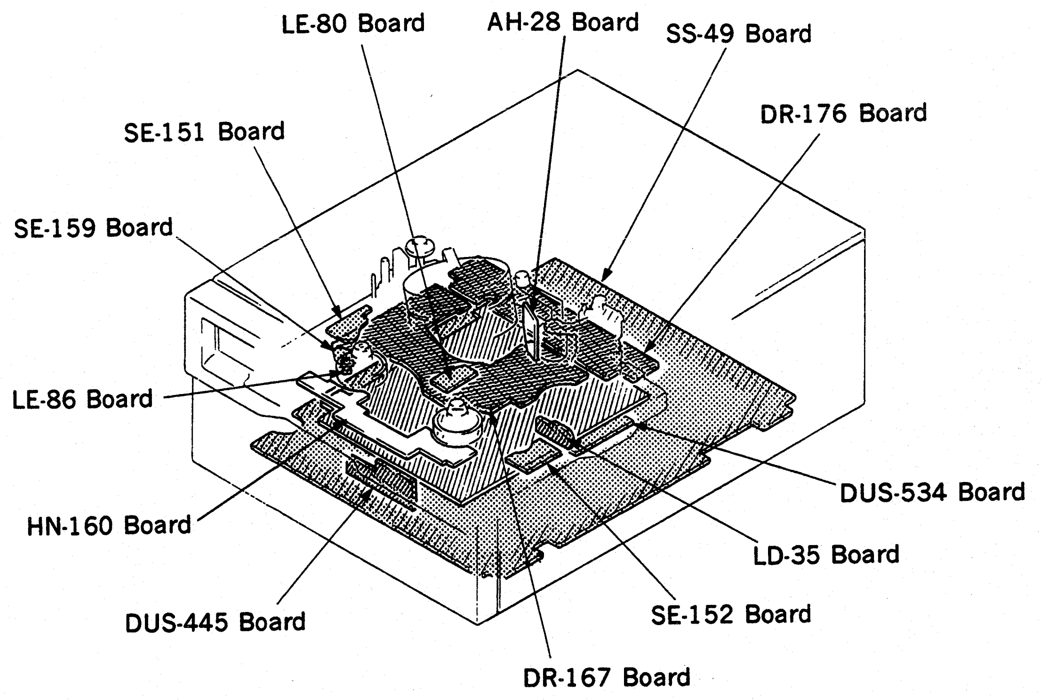
PB mode: KRV-45HNS or KRV-51HN

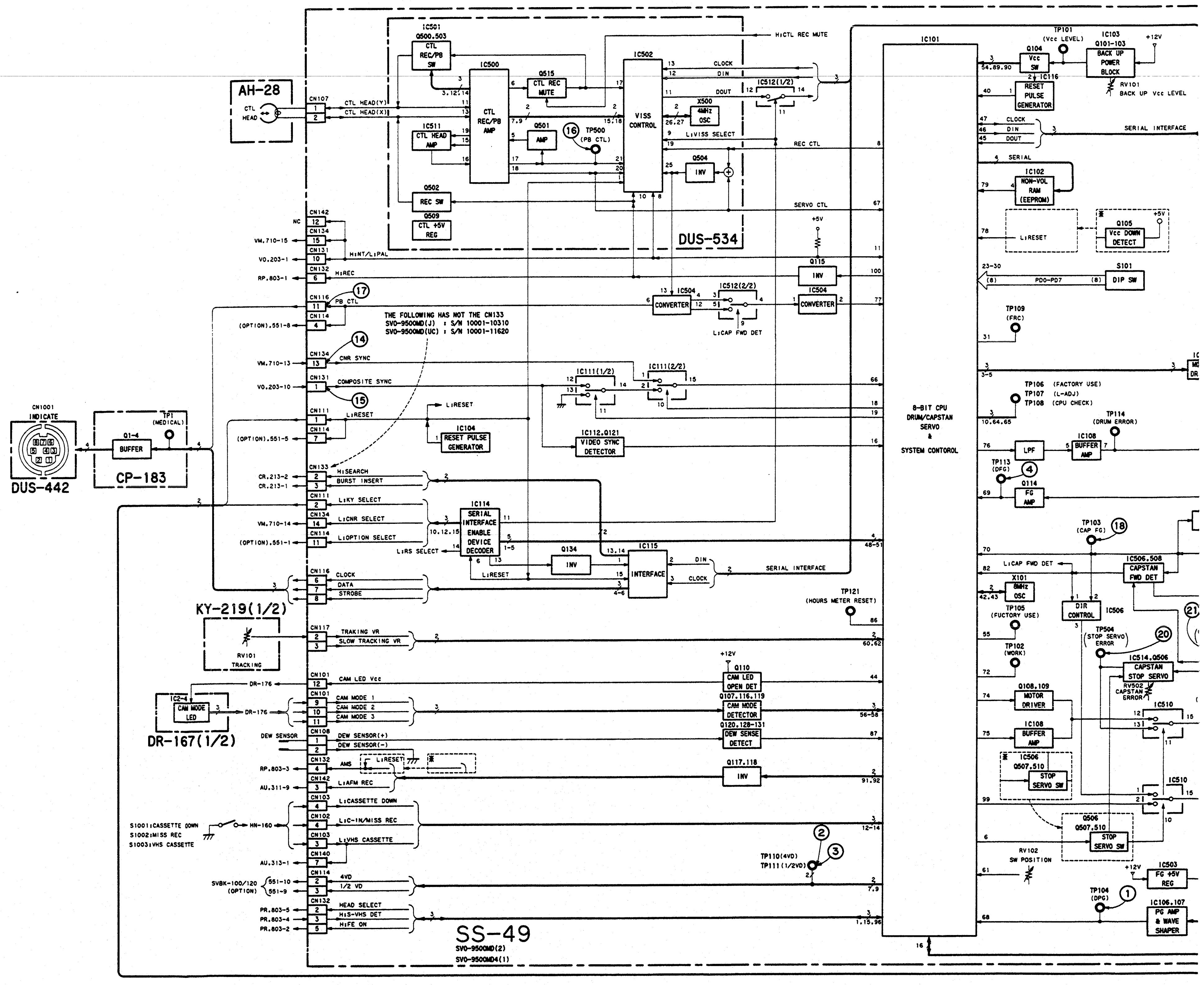
S-VIDEO IN: SMPTE color bars

STOP (E-E) mode: S-VHS

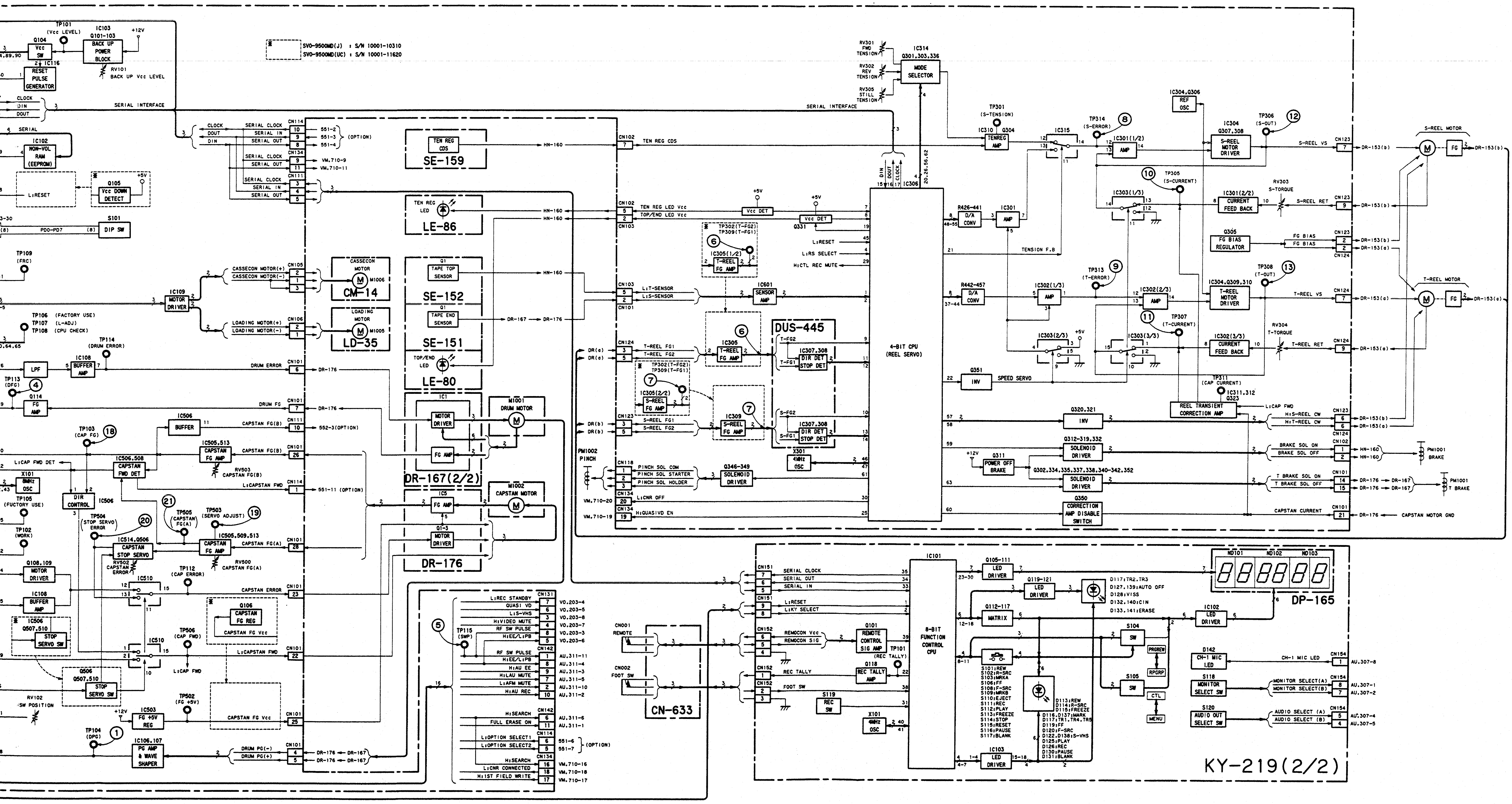
SERVO & SYSTEM CONTROL


CP-183 Board
DR-153 (b) Board
DUS-442 Board
CN-633 Board
CM-14 Board
KY-219 Board
DR-153 (a) Board
DP-165 Board


LE-80 Board
AH-28 Board
SS-49 Board
DR-176 Board
SE-151 Board
SE-159 Board
LE-86 Board
DUS-534 Board
HN-160 Board
LD-35 Board
DUS-445 Board
SE-152 Board
DR-167 Board


AH-28
CTL HEAD
DUS-534
IC501 Q500,503 CTL REC/PB SW
IC500 CTL REC/PB AMP
Q515 CTL REC MUTE
IC502 VISS CONTROL
X500 4MHz OSC
IC511 CTL HEAD AMP
Q501 AMP
TP500 (PB CTL)
Q502 REC SW
Q509 CTL +5V REG
Q504 INV
IC512(1/2)
H:CTL REC MUTE
CLOCK
DIN
DOUT
L:VISS SELECT
REC CTL
SERVO CTL
CN1001 INDICATE
DUS-442
Q1-4 BUFFER
TP1 (MEDICAL)
CP-183
THE FOLLOWING HAS NOT THE CN133
SVO-9500MD(J) : S/N 10001-10310
SVO-9500MD(UC) : S/N 10001-11620
IC504 CONVERTER
IC512(2/2)
L:CAP FWD DET
Q115 INV
IC111(1/2)
IC111(2/2)
IC104 RESET PULSE GENERATOR
IC112,Q121 VIDEO SYNC DETECTOR
IC114 SERIAL INTERFACE ENABLE DEVICE DECODER
Q134 INV
IC115 INTERFACE
SERIAL INTERFACE
TP121 (HOURS METER RESET)
KY-219(1/2)
RV101 TRACKING
TRAKING VR
SLOW TRACKING VR
IC2-4 CAM MODE LED
DR-167(1/2)
CAM LED Vcc
CAM MODE 1
CAM MODE 2
CAM MODE 3
DEW SENSOR(+)
DEW SENSOR(-)
Q110 CAM LED OPEN DET
Q107,116,119 CAM MODE DETECTOR
Q120,128-131 DEW SENSE DETECT
Q117,118 INV
S1001:CASSETTE DOWN
S1002:MISS REC
S1003:VHS CASSETTE
L:CASSETTE DOWN
L:C-IN/MISS REC
L:VHS CASSETTE
4VD
1/2 VD
TP110(4VD)
TP111(1/2VD)
HEAD SELECT
H:S-VHS DET
H:FE ON
SS-49
SVO-9500MD(2)
SVO-9500MD4(1)
IC101
8-BIT CPU DRUM/CAPSTAN SERVO & SYSTEM CONTOROL
TP101 (Vcc LEVEL)
Q104 Vcc SW
IC103 Q101-103 BACK UP POWER BLOCK
RV101 BACK UP Vcc LEVEL
IC116 RESET PULSE GENERATOR
SERIAL INTERFACE
IC102 NON-VOL RAM (EEPROM)
Q105 Vcc DOWN DETECT
L:RESET
S101 DIP SW
PD0-PD7
TP109 (FRC)
TP106 (FACTORY USE)
TP107 (L-ADJ)
TP108 (CPU CHECK)
TP114 (DRUM ERROR)
LPF
IC108 BUFFER AMP
TP113 (DFG)
Q114 FG AMP
TP103 (CAP FG)
L:CAP FWD DET
IC506,508 CAPSTAN FWD DET
X101 8MHz OSC
TP105 (FACTORY USE)
DIR CONTROL
IC506
TP504 (STOP SERVO) ERROR
TP102 (WORK)
IC514,Q506 CAPSTAN STOP SERVO
RV502 CAPSTAN ERROR
Q108,109 MOTOR DRIVER
IC108 BUFFER AMP
IC510
IC506 Q507,510 STOP SERVO SW
Q506 Q507,510 STOP SERVO SW
RV102 SW POSITION
TP104 (DPG)
IC503 FG +5V REG
IC106,107 PG AMP & WAVE SHAPER

Note: 次のセットには，DUS-534基板がありません。但し，回路は SS-49基板に含まれています。
The following has not the DUS-534 board. However, this circuit is included on SS-49 board.
SVO-9500MD (J) : S/N 10001—10310
SVO-9500MD (UC) : S/N 10001—11620


SVO-9500MD(J) : S/N 10001-10310
SVO-9500MD(UC) : S/N 10001-11620
IC103 Q101-103 BACK UP POWER BLOCK
Q104 Vcc SW
IC116 RESET PULSE GENERATOR
IC102 NON-VOL RAM (EEPROM)
Q105 Vcc DOWN DETECT
S101 DIP SW
SERIAL INTERFACE
IC109 MOTOR DRIVER
IC108 BUFFER AMP
LPF
Q114 FG AMP
IC506 BUFFER
IC505,513 CAPSTAN FG AMP
IC506,508 CAPSTAN FWD DET
X101 8MHz OSC
DIR CONTROL
IC514,Q506 CAPSTAN STOP SERVO
IC505,509,513 CAPSTAN FG AMP
Q108,109 MOTOR DRIVER
IC108 BUFFER AMP
IC510
Q106 CAPSTAN FG REG
Q506 Q507,510 STOP SERVO SW
IC503 FG +5V REG
IC106,107 PG AMP & WAVE SHAPER
TEN REG CDS
SE-159
TEN REG LED
LE-86
CASSECON MOTOR M1006
CM-14
LOADING MOTOR M1005
LD-35
Q1 TAPE TOP SENSOR
SE-152
Q1 TAPE END SENSOR
SE-151
TOP/END LED
LE-80
IC1 MOTOR DRIVER
FG AMP
M1001 DRUM MOTOR
DR-167(2/2)
IC5 FG AMP
M1002 CAPSTAN MOTOR
Q1-3 MOTOR DRIVER
DR-176
IC305(1/2) T-REEL FG AMP
IC601 SENSOR AMP
IC305 T-REEL FG AMP
IC305(2/2) S-REEL FG AMP
IC309 S-REEL FG AMP
DUS-445
IC307,308 DIR DET T-FG1 STOP DET
IC307,308 DIR DET S-FG1 STOP DET
X301 4MHz OSC
Q346-349 SOLENOID DRIVER
IC314 Q301,303,336 MODE SELECTOR
4-BIT CPU (REEL SERVO)
IC310 Q304 TENREG AMP
IC315
IC301(1/2) AMP
IC304,Q306 REF OSC
IC304 Q307,308 S-REEL MOTOR DRIVER
IC303(1/3)
IC301(2/2) CURRENT FEED BACK
Q305 FG BIAS REGULATOR
R426-441 D/A CONV
IC301 AMP
R442-457 D/A CONV
IC302(1/3) AMP
IC302(2/3) AMP
IC304,Q309,310 T-REEL MOTOR DRIVER
IC303(2/3)
IC303(3/3)
IC302(3/3) CURRENT FEED BACK
Q351 INV
SPEED SERVO
IC311,312 Q323 REEL TRANSIENT CORRECTION AMP
Q320,321 INV
Q312-319,332 SOLENOID DRIVER
Q311 POWER OFF BRAKE
Q302,334,335,337,338,340-342,352 SOLENOID DRIVER
Q350 CORRECTION AMP DISABLE SWITCH
S-REEL MOTOR
T-REEL MOTOR
PM1001 BRAKE
PM1001 T BRAKE
PM1002 PINCH
CAPSTAN MOTOR GND
IC101 8-BIT FUNCTION CONTROL CPU
Q105-111 LED DRIVER
Q119-121 LED DRIVER
Q112-117 MATRIX
Q101 REMOTE CONTROL SIG AMP
Q118 REC TALLY AMP
S119 REC SW
X101 4MHz OSC
IC103 LED DRIVER
S104 SW
S105 SW
PRGREW
RPGRP
CTL
MENU
IC102 LED DRIVER
ND101 ND102 ND103
DP-165
D142 CH-1 MIC LED
S118 MONITOR SELECT SW
S120 AUDIO OUT SELECT SW
CN001 REMOTE
CN002 FOOT SW
CN-633
KY-219(2/2)
S101:REW S102:R-SRC S103:MRKA S106:FF S108:F-SRC S109:MRKB S110:EJECT S111:REC S112:PLAY S113:FREEZE S114:STOP S115:RESET S116:PAUSE S117:BLANK
D117:TR2,TR3 D127,139:AUTO OFF D128:VISS D132,140:CIN D133,141:ERASE
D113:REW D114:R-SRC D115:FREEZE D116,D137:MARK D117:TR1,TR4,TR5 D119:FF D120:F-SRC D122,D138:S-VHS D125:PLAY D126:REC D130:PAUSE D131:BLANK

SECTION 12
SEMICONDUCTOR PIN ASSIGNMENTS

ここに記載されているIC，トランジスタ，ダイオードは，それぞれの機能を等価的に表わしたものです。したがって互換性を表わすものではありません。(互換性のない型名が併記されている事もあります。)部品の交換をする時は，別冊の補修部品表を参照して下さい。

ICs, transistors and diodes that functions are equivalent are described here. Therefore, incompatible device names may be described together. For parts replacement, refer to the Spare Parts section in this manual.

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MB87647	12-10
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MC14013BCP	12-19
MC14053BCP	12-19
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MC14066BCP	12-18
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MC14094BCP	12-18
MC14538BCP	12-18
MC14538BF	12-18
MC14576AF	12-18
MC14576BF	12-18
MC14577AF	12-18
MC14577BF	12-18
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NJM2220S	12-21
NJM2233BM	12-21
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NJM2903D	12-16
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SEMICONDUCTOR INDEX

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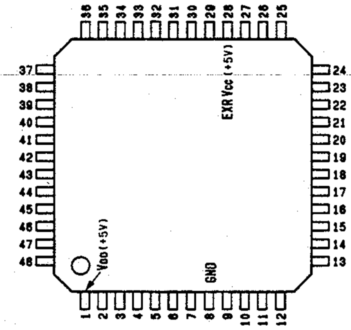
等価回路は IC メーカーの Data Book に従いました。
The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

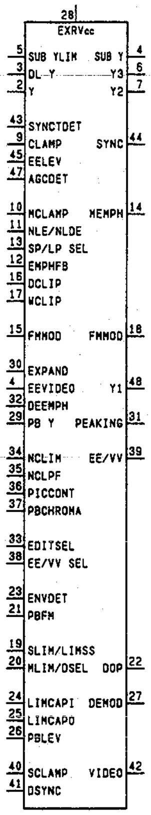
AN3237FB (MATSUSHITA)

VTR LUMINANCE SIGNAL PROCESSOR

– TOP VIEW –


EXRVcc (+5V)
VDD (+5V)
GND
1 2 3 4 5 6 7 8 9 10 11 12
13 14 15 16 17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 32 33 34 35 36
37 38 39 40 41 42 43 44 45 46 47 48

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	–	Vcc (+5V)	17	I	WCLIP	33	I	EDITSEL
2	I	Y	18	O	FMMOD	34	I	NCLIM
3	I	DL Y	19	I	SLIM/LIMSS	35	I	NCLPF
4	O	SUB Y	20	I	MLIM/DSEL	36	I	PICCONT
5	I	SUB YLIM	21	I	PBFM	37	I	PBCHROMA
6	O	Y3	22	O	DOP	38	I	EE/VV SEL
7	O	Y2	23	I	ENVDET	39	O	EE/VV
8	–	GND	24	I	LIMCAPI	40	I	SCLAMP
9	I	CLAMP	25	O	LIMCAPO	41	I	DSYNC
10	I	MCLAMP	26	I	PBLEV	42	O	VIDEO
11	I	NLE/NLDE	27	O	DEMOD	43	I	SYNCTDET
12	I	EMPHFB	28	–	EXRVcc (+5V)	44	O	SYNC
13	I	SP/LP SEL	29	I	PB Y	45	I	EELEV
14	O	MEMPH	30	I	EXPAND	46	I	EEVIDEO
15	I	FMMOD	31	O	PEAKING	47	I	AGCDET
16	I	DCLIP	32	I	DEEMPH	48	O	Y1


28
EXRVcc
5 SUB YLIM
3 DL Y
2 Y
SUB Y 4
Y3 6
Y2 7
43 SYNCTDET
9 CLAMP
45 EELEV
47 AGCDET
SYNC 44
10 MCLAMP
11 NLE/NLDE
13 SP/LP SEL
12 EMPHFB
16 DCLIP
17 WCLIP
MEMPH 14
15 FMMOD
FMMOD 18
30 EXPAND
46 EEVIDEO
32 DEEMPH
29 PB Y
Y1 48
PEAKING 31
34 NCLIM
35 NCLPF
36 PICCONT
37 PBCHROMA
EE/VV 39
33 EDITSEL
38 EE/VV SEL
23 ENVDET
21 PBFM
19 SLIM/LIMSS
20 MLIM/DSEL
DOP 22
24 LIMCAPI
25 LIMCAPO
26 PBLEV
DEMOD 27
40 SCLAMP
41 DSYNC
VIDEO 42

INPUT

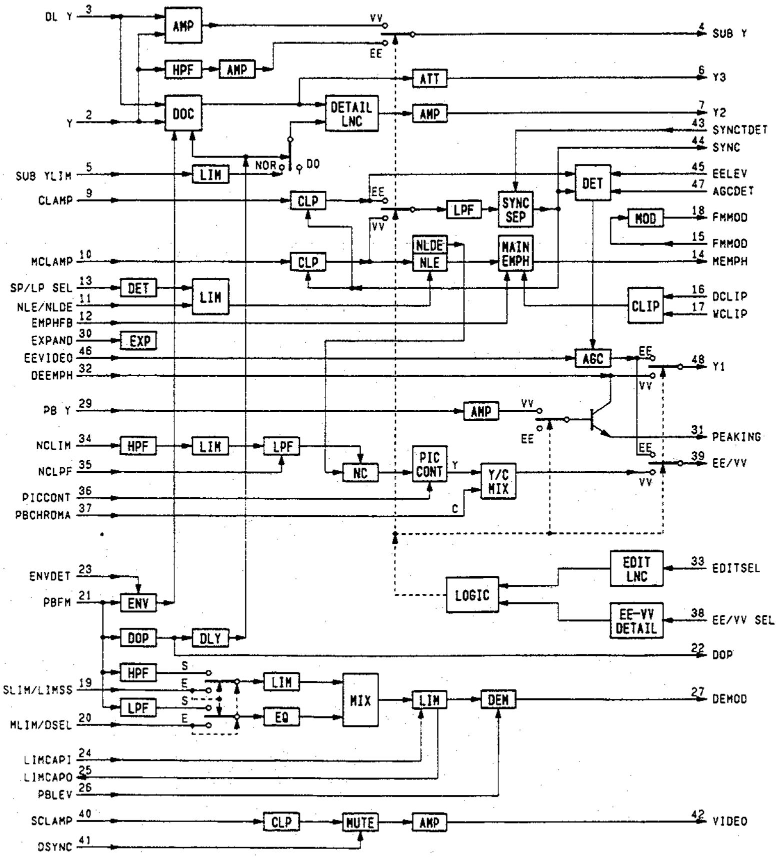
AGCDET	; AUTO GAIN CONTROL DETECTION INPUT
CLAMP	; CLAMP INPUT
DCLIP	; DARK CLIP ADJUSTMENT INPUT
DEEMPH	; DE-EMPHASIS INPUT
DL Y	; DELAYED (1H) LUMINANCE SIGNAL INPUT
DSYNC	; DUMMY SYNC SIGNAL INPUT
EDITSEL	; EDIT MODE SELECT INPUT
EE/VV SEL	; EE/VV SELECT INPUT
EELEV	; EE VIDEO LEVEL ADJUSTMENT INPUT
EEVIDEO	; EE VIDEO INPUT
EMPHFB	; MAIN EMPHASIS FEEDBACK INPUT
ENVDET	; ENVELOPE DETECTION INPUT
EXPAND	; EXPANDER INPUT
FMMOD	; FM MODULATOR INPUT
LIMCAPI	; CAPACITOR CONNECTION FOR MAIN LIMITER
MCLAMP	; MAIN CLAMP INPUT
MLIM/DSEL	; DOUBLE (MAIN) LIMITER INPUT, WHEN EXTENDED DEFINITION MODE (S-VHS, Hi8 etc.) & DEFINITION SELECT INPUT
NCLIM	; LIMITER INPUT FOR NOISE CANCELER
NCLPF	; LPF INPUT FOR NOISE CANCELER
NLE/NLDE	; NON-LINEAR EMPHASIS/DEEMPHASIS INPUT
PBCHROMA	; PLAYBACK CHROMINANCE SIGNAL INPUT
PBFM	; PLAYBACK FM SIGNAL INPUT
PBLEV	; PLAYBACK LEVEL ADJUSTMENT INPUT
PB Y	; PLAYBACK Y SIGNAL INPUT
PICCONT	; PICTURE CONTROL INPUT
SCLAMP	; SECOND CLAMP INPUT
SLIM/LIMSS	; DOUBLE (SUB) LIMITER INPUT, WHEN EXTENDED DEFINITION MODE (S-VHS, Hi8 etc.) & DOUBLE LIMITER SWITCHOVER STOP INPUT
SP/LP SEL	; STANDARD/LONG PLAY MODE SELECT INPUT (FM CARRIER INTERLEAVE PULSE INPUT)
SUB YLIM	; LUMINANCE LIMITER INPUT
SYNCTDET	; SYNC TIP DETECTION INPUT
WCLIP	; WHITE CLIP ADJUSTMENT INPUT
Y	; LUMINANCE MAIN SIGNAL INPUT

OUTPUT

DEMOD	; FM DEMODULATOR OUTPUT
DOP	; DROPOUT PULSE OUTPUT
EE/VV	; EE/VV SWITCHOVER OUTPUT
FMMOD	; FM MODULATOR OUTPUT
LIMCAPO	; CAPACITOR CONNECTION FOR MAIN LIMITER
MEMPH	; MAIN EMPHASIS OUTPUT
PEAKING	; VIDEO PEAKING OUTPUT
SUB Y	; LUMUNANCE SUB SIGNAL OUTPUT
SYNC	; COMPOSITE SYNC OUTPUT
VIDEO	; COMPOSITE VIDEO OUTPUT
Y1	; Y SIGNAL OUTPUT
Y2	; Y SIGNAL OUTPUT FOR CLAMP
Y3	; Y SIGNAL OUTPUT FOR DELAYED Y

OTHER

EXRVcc	; EXCEPT REC Vcc (+5V)

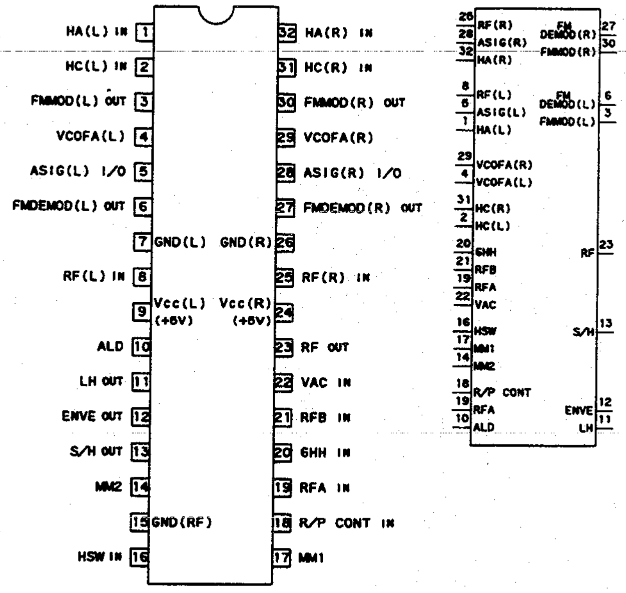

DL Y 3
Y 2
SUB YLIM 5
CLAMP 9
MCLAMP 10
SP/LP SEL 13
NLE/NLDE 11
EMPHFB 12
EXPAND 30
EEVIDEO 46
DEEMPH 32
PB Y 29
NCLIM 34
NCLPF 35
PICCONT 36
PBCHROMA 37
ENVDET 23
PBFM 21
SLIM/LIMSS 19
MLIM/DSEL 20
LIMCAPI 24
LIMCAPO 25
PBLEV 26
SCLAMP 40
DSYNC 41
AMP
HPF
AMP
DOC
DETAIL LNC
ATT
AMP
LIM
NOR
DO
VV
EE
CLP
LPF
SYNC SEP
DET
MOD
CLP
NLDE NLE
MAIN EMPH
DET
LIM
CLIP
EXP
AGC
AMP
HPF
LIM
LPF
NC
PIC CONT
Y
Y/C MIX
C
EDIT LNC
LOGIC
EE-VV DETAIL
ENV
DOP
DLY
HPF
LPF
S
E
LIM
EQ
MIX
LIM
DEM
CLP
MUTE
AMP
4 SUB Y
6 Y3
7 Y2
43 SYNCTDET
44 SYNC
45 EELEV
47 AGCDET
18 FMMOD
15 FMMOD
14 MEMPH
16 DCLIP
17 WCLIP
48 Y1
31 PEAKING
39 EE/VV
33 EDITSEL
38 EE/VV SEL
22 DOP
27 DEMOD
42 VIDEO

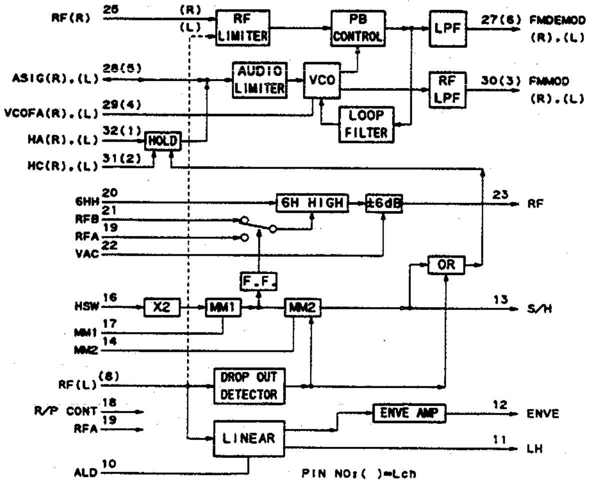
NOTE: S:STANDARD DIFINITION
E:EXTENDED DIFINITION

AN3932S (MATSUSHITA)

FM AUDIO AND FM MAIN FOR VCR

– TOP VIEW –


HA(L) IN 1
HC(L) IN 2
FMMOD(L) OUT 3
VCOFA(L) 4
ASIG(L) I/O 5
FMDEMOD(L) OUT 6
7 GND(L)
RF(L) IN 8
9 Vcc(L) (+5V)
ALD 10
LH OUT 11
ENVE OUT 12
S/H OUT 13
MM2 14
15 GND(RF)
HSW IN 16
32 HA(R) IN
31 HC(R) IN
30 FMMOD(R) OUT
29 VCOFA(R)
28 ASIG(R) I/O
27 FMDEMOD(R) OUT
GND(R) 26
25 RF(R) IN
Vcc(R) (+5V) 24
23 RF OUT
22 VAC IN
21 RFB IN
20 6HH IN
19 RFA IN
18 R/P CONT IN
17 MM1
26 RF(R)
28 ASIG(R)
32 HA(R)
FM DEMOD(R) 27
FMMOD(R) 30
8 RF(L)
5 ASIG(L)
1 HA(L)
FM DEMOD(L) 6
FMMOD(L) 3
29 VCOFA(R)
4 VCOFA(L)
31 HC(R)
2 HC(L)
20 6HH
21 RFB
19 RFA
22 VAC
RF 23
16 HSW
17 MM1
14 MM2
S/H 13
18 R/P CONT
19 RFA
10 ALD
ENVE 12
LH 11


RF(R) 25
(R)
(L)
RF LIMITER
PB CONTROL
LPF
27(6) FMDEMOD (R).(L)
ASIG(R).(L) 28(5)
AUDIO LIMITER
VCO
RF LPF
30(3) FMMOD (R).(L)
VCOFA(R).(L) 29(4)
LOOP FILTER
HA(R).(L) 32(1)
HOLD
HC(R).(L) 31(2)
6HH 20
RFB 21
RFA 19
VAC 22
6H HIGH
±6dB
23 RF
OR
F.F.
HSW 16
X2
MM1
MM2
13 S/H
MM1 17
MM2 14
RF(L) (8)
DROP OUT DETECTOR
R/P CONT 18
RFA 19
ENVE AMP
12 ENVE
LINEAR
11 LH
ALD 10
PIN NO:( )=Lch

INPUT
6HH :6H HIGH
HA(R).(L) :HOLD AMP
HC(R).(L) :HOLD CONTROL
HSW :HOLD SWITCH
RF(R).(L) :RF SIGNAL
RFA :RF INPUT A
RFB :RF INPUT B
R/P CONT :REC/PB CONTROL
VAC :VARIABLE AMP CONTROL

OUTPUT
ENVE :ENVELOPE
FMDEMOD(R).(L) :FM DEMODULATION
FMMOD(R).(L) :FM MODULATION
LH :LINEAR HIGH
RF :RF OUTPUT
S/H :S/H OUTPUT

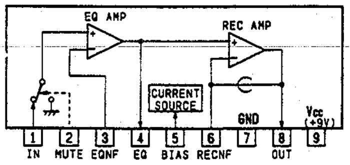
INPUT/OUTPUT
ASIG:AUDIO SIGNAL

OTHERS
ACD :AUDIO LINEAR DETECTION
MM1 :MONO MULTI1
MM2 :MONO MULTI2
VCOFA(R).(L):VCO FREQUENCY ADJUSTMENT

AN6392L (MATSUSHITA)

VIDEO SIGNAL RECODING AMPLIFIER

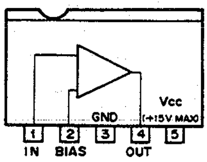
– PRINTED SIDE VIEW –


EQ AMP
REC AMP
CURRENT SOURCE
GND
Vcc (+9V)
1 IN
2 MUTE
3 EQNF
4 EQ
5 BIAS
6 RECNF
7
8 OUT
9

BA401 (ROHM)

RF AMPLIFIER

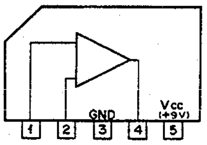
– SIDE VIEW –


GND
Vcc (+15V MAX)
1 IN
2 BIAS
3
4 OUT
5

TA7060AP (TOSHIBA)

LINEAR AMP

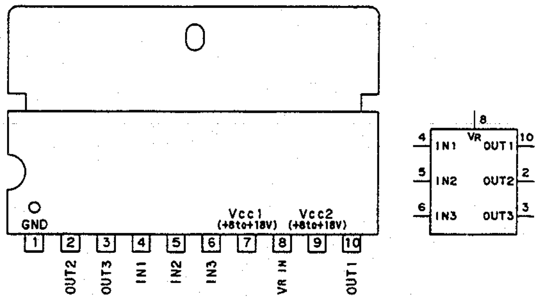
– SIDE VIEW –

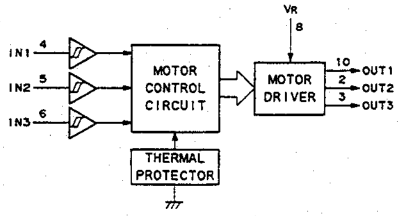

GND
Vcc (+9V)
1
2
3
4
5

BA6238A (ROHM)

FORWARD AND REVERSE MOTOR DRIVER

– SIDE VIEW –


GND
Vcc1 (+8to+18V)
Vcc2 (+8to+18V)
1
2 OUT2
3 OUT3
4 IN1
5 IN2
6 IN3
7
8 VR IN
9
10 OUT1
8 VR
4 IN1 OUT1 10
5 IN2 OUT2 2
6 IN3 OUT3 3

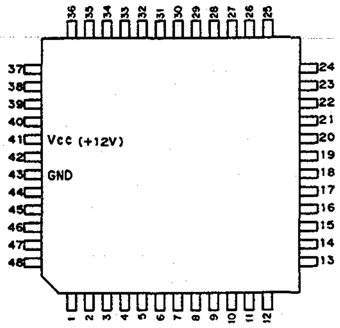

VR
8
IN1 4
IN2 5
IN3 6
MOTOR CONTROL CIRCUIT
MOTOR DRIVER
10 OUT1
2 OUT2
3 OUT3
THERMAL PROTECTOR

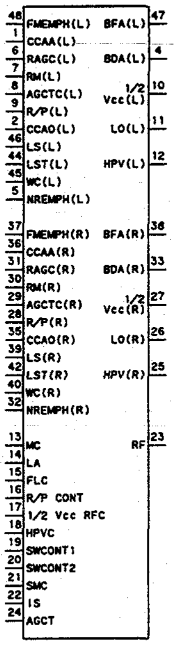
INPUT			OUTPUT			OPERATION
IN1	IN2	IN3	OUT1	OUT2	OUT3	
0	0	X	0	0	0	BRAKE
1	0	0	1	0	OPEN	MOTOR CURRENT OUT1→OUT2
1	0	1	0	1	OPEN	MOTOR CURRENT OUT2→OUT1
0	1	0	1	OPEN	0	MOTOR CURRENT OUT1→OUT3
0	1	1	0	OPEN	1	MOTOR CURRENT OUT3→OUT1
1	1	X	0	0	0	BRAKE

0:LOW LEVEL
1:HIGH LEVEL
X:DON'T CARE

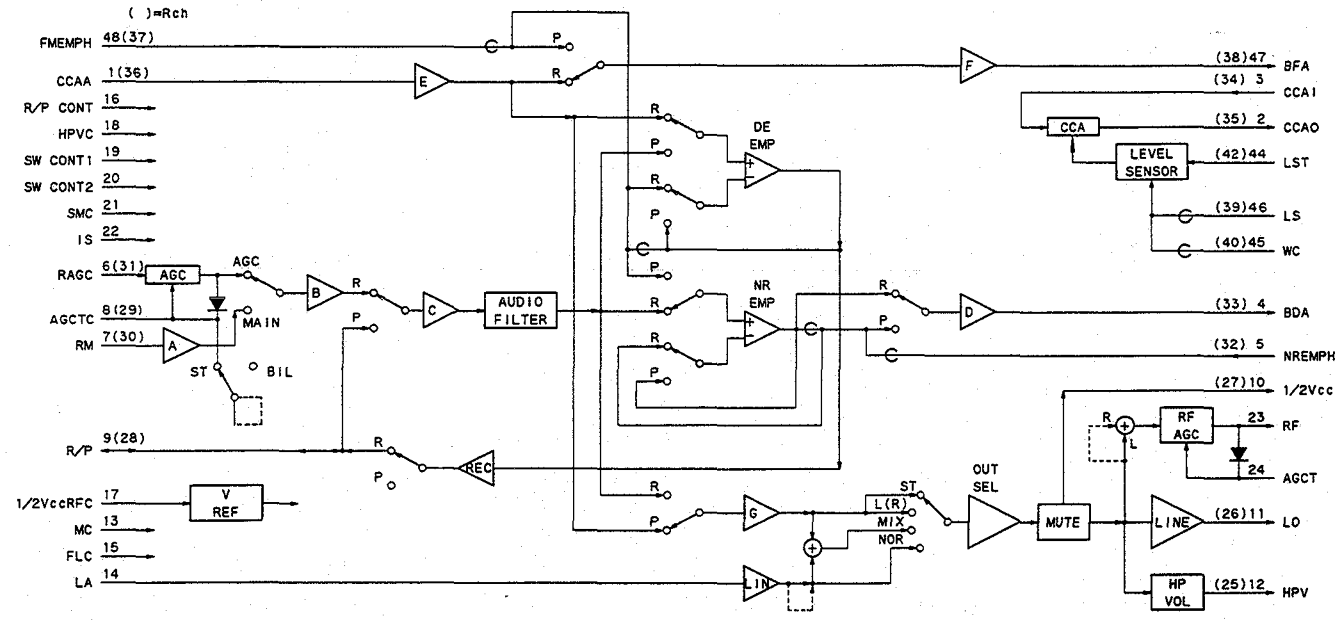
AN3972FC (MATSUSHITA)

PEAK NOISE REDUCTION FOR HIFI VCR FM AUDIO
- TOP VIEW -


36
35
34
33
32
31
30
29
28
27
26
25
37
38
39
40
41
42
43
44
45
46
47
48
Vcc (+12V)
GND
24
23
22
21
20
19
18
17
16
15
14
13
1
2
3
4
5
6
7
8
9
10
11
12


48 FMEMPH(L)
1 CCAA(L)
6 RAGC(L)
7 RM(L)
8 AGCTC(L)
9 R/P(L)
2 CCAO(L)
46 LS(L)
44 LST(L)
45 WC(L)
5 NREMPH(L)
BFA(L) 47
BDA(L) 4
1/2 Vcc(L) 10
LO(L) 11
HPV(L) 12
37 FMEMPH(R)
36 CCAA(R)
31 RAGC(R)
30 RM(R)
29 AGCTC(R)
28 R/P(R)
35 CCAO(R)
39 LS(R)
42 LST(R)
40 WC(R)
32 NREMPH(R)
BFA(R) 38
BDA(R) 33
1/2 Vcc(R) 27
LO(R) 26
HPV(R) 25
13 MC
14 LA
15 FLC
16 R/P CONT
17 1/2 Vcc RFC
18 HPVC
19 SWCONT1
20 SWCONT2
21 SMC
22 IS
24 AGCT
RF 23

PIN NO	I/O	SIGNAL	PIN NO	I/O	SIGNAL	PIN NO	I/O	SIGNAL
1	I	CCAA(L)	17	I	1/2VccRFC	33	O	BDA(R)
2	O	CCAO(L)	18	I	HPVC	34	I	CCAI(R)
3	I	CCAI(L)	19	I	SWCONT1	35	O	CCAO(R)
4	O	BDA(L)	20	I	SWCONT2	36	I	CCAA(R)
5	I	NREMPH(L)	21	I	SMC	37	I	FMEMPH(R)
6	I	RAGC(L)	22	I	IS	38	O	BFA(R)
7	I	RM(L)	23	O	RF	39	I	LS(R)
8	I	AGCTC(L)	24	I	AGCT	40	I	WC(R)
9	I/O	R/P(L)	25	O	HPV(R)	41	–	Vcc(+12V)
10	O	1/2 Vcc(L)	26	O	LO(R)	42	I	LST(R)
11	O	LO(L)	27	O	1/2Vcc(R)	43	–	GND
12	O	HPV(L)	28	I/O	R/P(R)	44	I	LST
13	I	MC	29	I	AGCTC(R)	45	I	WC(L)
14	I	LA	30	I	RM(R)	46	I	LS(L)
15	I	FLC	31	I	RAGC(R)	47	O	BFA(L)
16	I	R/P CONT	32	I	NREMPH(R)	48	I	FMEMPH(L)


( )=Rch
FMEMPH 48(37)
CCAA 1(36)
R/P CONT 16
HPVC 18
SW CONT1 19
SW CONT2 20
SMC 21
IS 22
RAGC 6(31)
AGCTC 8(29)
RM 7(30)
R/P 9(28)
1/2VccRFC 17
MC 13
FLC 15
LA 14
AGC
AGC
MAIN
ST
BIL
A
B
C
E
F
D
G
P
R
AUDIO FILTER
DE EMP
NR EMP
REC
V REF
CCA
LEVEL SENSOR
RF AGC
OUT SEL
L(R)
MIX
NOR
MUTE
LINE
LIN
HP VOL
L
(38)47 BFA
(34) 3 CCAI
(35) 2 CCAO
(42)44 LST
(39)46 LS
(40)45 WC
(33) 4 BDA
(32) 5 NREMPH
(27)10 1/2Vcc
23 RF
24 AGCT
(26)11 LO
(25)12 HPV

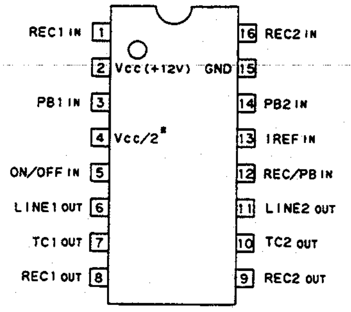
INPUT
1/2 Vcc RFC ; 1/2 Vcc RIPPLE FILTERER CAPACITOR
AGCT ; AGC TIMING FOR RF
AGCTC (L),(R) ; AGC TIMING CAPACITOR
CCAA (L),(R) ; CCA AMP
CCAI (L),(R) ; CCA INPUT
FLC ; FORCED LINEAR CONTROL
FMEMPH (L),(R) ; FM EMPHASIS CAPACITOR
HPVC ; HEADPHONE VOLUME CONTROL DC
IS ; REC AGC/MANUAL CONTROL
LA ; LINEAR AUDIO
LS (L),(R) ; LEVEL SENSOR
LST (L),(R) ; LEVEL SENSOR TIMING
MC ; MUTING CONTROL
NREMPH (L),(R) ; NR EMPHASIS CAPACITOR
RAGC (L),(R) ; REC AGC
RM (L),(R) ; REC MANUAL
R/P CONT ; REC/PB CONTROL
SMC ; AGC ST/BILL/OUTPUT MIX CONTROL
SW CONT1 ; OUTPUT SWITCHING CONTROL1
SW CONT2 ; OUTPUT SWITCHING CONTROL2

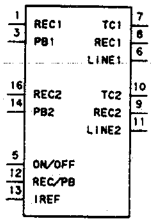
OUTPUT
1/2 Vcc (L),(R) ; 1/2 Vcc OUTPUT
BDA (L),(R) ; BUFFER D AMP
BFA (L),(R) ; BUFFER F AMP
CCAO (L),(R) ; CCA OUTPUT
HPV (L),(R) ; HEADPHONE VOLUME
LO (L),(R) ;LINE OUTPUT
RF ;OUTPUT FOR RF

INPUT/OUTPUT
R/P (L),(R);REC OUT/PB IN

CXA1102P (SONY)

DOLBY TYPE-B NOISE REDUCTION SYSTEM
- TOP VIEW -

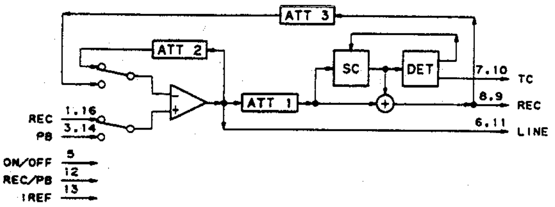

REC1 IN 1
2 Vcc(+12V)
PB1 IN 3
4 Vcc/2*
ON/OFF IN 5
LINE1 OUT 6
TC1 OUT 7
REC1 OUT 8
16 REC2 IN
GND 15
14 PB2 IN
13 IREF IN
12 REC/PB IN
11 LINE2 OUT
10 TC2 OUT
9 REC2 OUT


1 REC1
3 PB1
16 REC2
14 PB2
5 ON/OFF
12 REC/PB
13 IREF
TC1 7
REC1 8
LINE1 6
TC2 10
REC2 9
LINE2 11

*Vcc/2:SINGLE VOLTAGE :+6V
DOUBLE VOLTAGE :GND

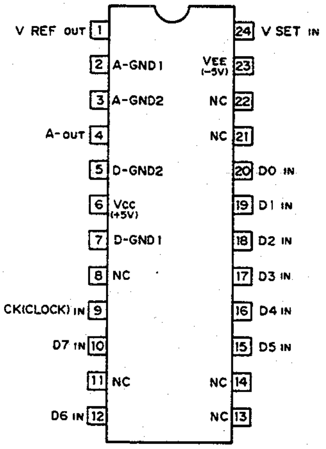
INPUT
IREF :REFERENCE CURRENT SOURCE
ON/OFF:DOLBY NR ON/OFF SELECT(H:OFF/L:ON)
PB :PB(DECODE) INPUT
REC :REC(ENCODE) INPUT
REC/PB:REC/PB SELECT(H:PB/L:REC)

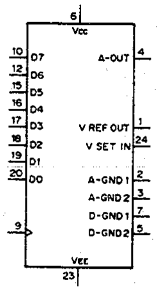
OUTPUT
LINE:LINE(DECODE) OUTPUT
REC :REC(ENCODE) OUTPUT
TC :LEVEL DETECTOR TIME CONSTANT

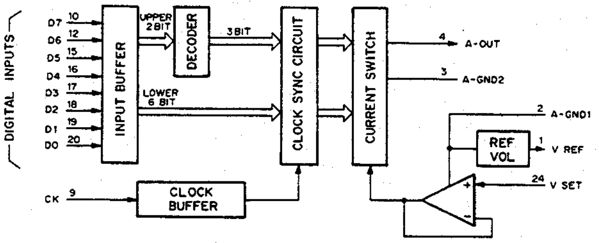

ATT 3
ATT 2
SC
DET
ATT 1
7.10 TC
8.9 REC
6.11 LINE
REC 1.16
PB 3.14
ON/OFF 5
REC/PB 12
IREF 13

CXA1106M (SONY) FLAT PACKAGE

8-BIT D/A CONVERTER (TTL INPUT)
- TOP VIEW -

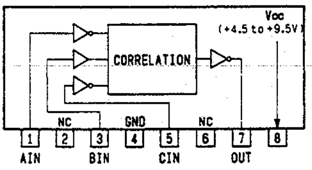

V REF OUT 1
2 A-GND1
3 A-GND2
A-OUT 4
5 D-GND2
6 Vcc (+5V)
7 D-GND1
8 NC
CK(CLOCK) IN 9
D7 IN 10
11 NC
D6 IN 12
24 V SET IN
VEE (-5V) 23
NC 22
NC 21
20 D0 IN
19 D1 IN
18 D2 IN
17 D3 IN
16 D4 IN
15 D5 IN
NC 14
NC 13

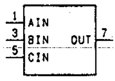

6 Vcc
10 D7
12 D6
15 D5
16 D4
17 D3
18 D2
19 D1
20 D0
9
A-OUT 4
V REF OUT 1
V SET IN 24
A-GND1 2
A-GND2 3
D-GND1 7
D-GND2 5
VEE 23


DIGITAL INPUTS
D7 10
D6 12
D5 15
D4 16
D3 17
D2 18
D1 19
D0 20
INPUT BUFFER
UPPER 2BIT
DECODER
3BIT
LOWER 6 BIT
CLOCK SYNC CIRCUIT
CURRENT SWITCH
4 A-OUT
3 A-GND2
2 A-GND1
REF VOL
1 V REF
24 V SET
CK 9
CLOCK BUFFER

CXA1413L (SONY)

VERTICAL MUTUALIZER FOR DYNAMIC COMB FILTER
- PRINTED SIDE VIEW -


Vcc (+4.5 to +9.5V)
CORRELATION
NC
GND
NC
1 2 3 4 5 6 7 8
AIN
BIN
CIN
OUT

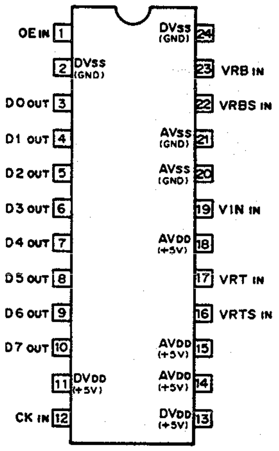

1 AIN
3 BIN
5 CIN
OUT 7

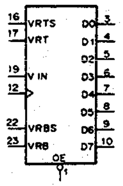
INPUT
AIN ;0H INPUT
BIN ;1H INPUT
CIN ;2H INPUT
$\left(\begin{array}{l}\text{BIASED TO } \frac{V_{CC}}{2}+0.7V \\ \text{INPUT RESISTANCE AT 20k-OHM}\end{array}\right)$

OUTPUT
OUT ;CORRELATED OUTPUT $\left(\frac{V_{CC}}{2}-0.7V\right)$

CXD1175AM (SONY) FLAT PACKAGE

C-MOS 8-BIT 20MSPS VIDEO A/D CONVERTER
- TOP VIEW -

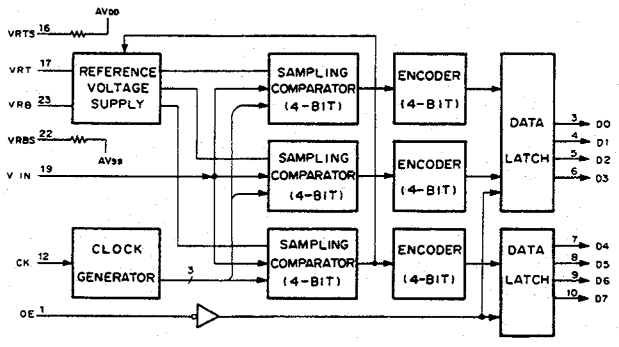

OE IN 1
2 DVss (GND)
D0 OUT 3
D1 OUT 4
D2 OUT 5
D3 OUT 6
D4 OUT 7
D5 OUT 8
D6 OUT 9
D7 OUT 10
11 DVDD (+5V)
CK IN 12
DVss (GND) 24
23 VRB IN
22 VRBS IN
AVss (GND) 21
AVss (GND) 20
19 VIN IN
AVDD (+5V) 18
17 VRT IN
16 VRTS IN
AVDD (+5V) 15
AVDD (+5V) 14
DVDD (+5V) 13


16 VRTS
17 VRT
19 V IN
12
22 VRBS
23 VRB
OE 1
D0 3
D1 4
D2 5
D3 6
D4 7
D5 8
D6 9
D7 10

AV_{DD} : ANALOG POWER SUPPLY
AV_{SS} : ANALOG GROUND
CK : CLOCK INPUT
D0 – 7 : DIGITAL DATA OUTPUTS (LSB to MSB)
DV_{DD} : DIGITAL POWER SUPPLY
DV_{SS} : DIGITAL GROUND
OE : OUTPUT ENABLE
(OE = HIGH ; HIGH IMPEDANCE)
VIN : ANALOG VOLTAGE INPUT
VRB : BOTTOM REFERENCE VOLTAGE INPUT
VRBS : AS SHORT-CIRCUIT AT VRB. GENERATES + 0.6V
VRT : TOP REFERENCE VOLTAGE INPUT
VRTS : AS SHORT-CIRCUIT AT VRT. GENERATES + 2.6V

STEP	INPUT SIGNAL VOLTAGE	DATA OUTPUTS							
		D7	D6	D5	D4	D3	D2	D1	D0
0	0V (VRT)	1	1	1	1	1	1	1	1
1	0.01V	1	1	1	1	1	1	1	0
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
127	1.34V	1	0	0	0	0	0	0	0
128	1.35V	0	1	1	1	1	1	1	1
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
255	2.7V (VRB)	0	0	0	0	0	0	0	0

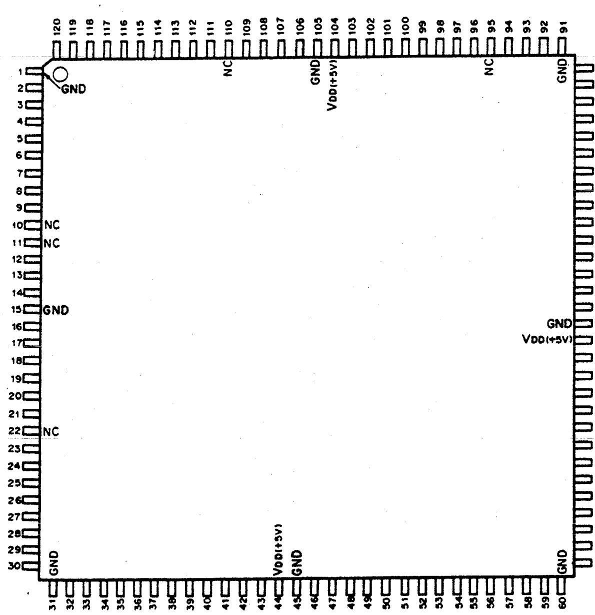
0 : LOW LEVEL
1 : HIGH LEVEL


AVDD
VRTS 16
VRT 17
VRB 23
VRBS 22
AVss
V IN 19
CK 12
OE 1
REFERENCE VOLTAGE SUPPLY
CLOCK GENERATOR
3
SAMPLING COMPARATOR (4-BIT)
SAMPLING COMPARATOR (4-BIT)
SAMPLING COMPARATOR (4-BIT)
ENCODER (4-BIT)
ENCODER (4-BIT)
ENCODER (4-BIT)
DATA LATCH
DATA LATCH
3 D0
4 D1
5 D2
6 D3
7 D4
8 D5
9 D6
10 D7

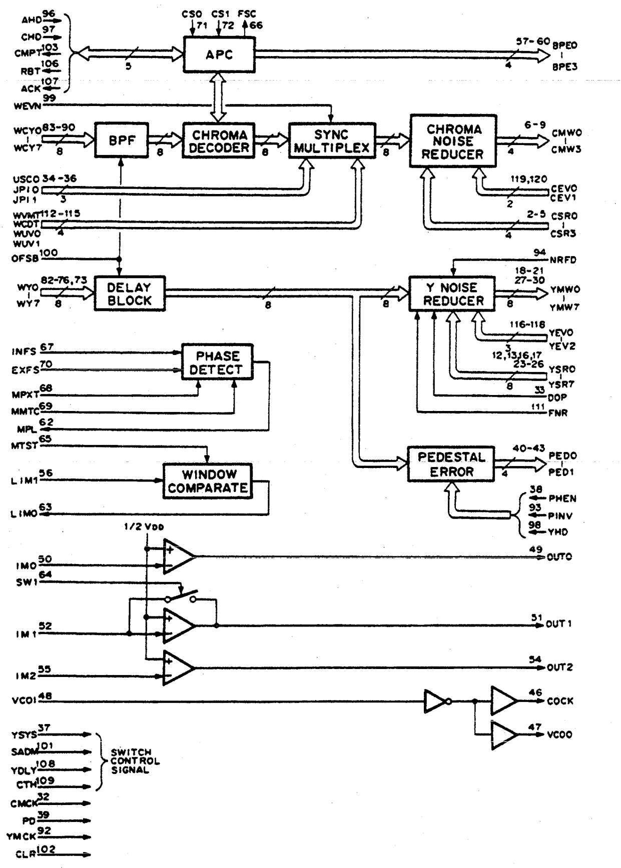
CXD1226Q (SONY)

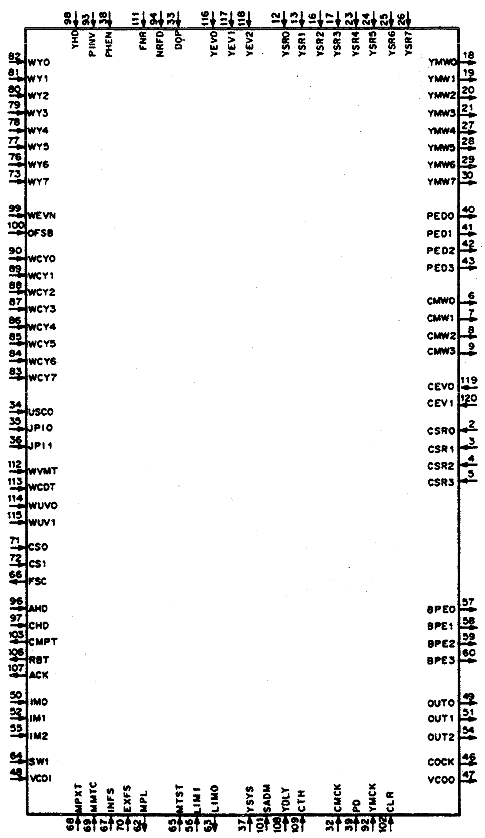
C-MOS DIGITAL CHROMA DECODER/Y, C FIELD NOISE REDUCER

– TOP VIEW –



PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	–	GND	31	–	GND	61	–	GND	91	–	GND
2	I	CSR0	32	I	CMCK	62	O	MPL	92	I	YMCK
3	I	CSR1	33	I	DOP	63	O	LIMO	93	I	PINV
4	I	CSR2	34	I	USC0	64	I	SW1	94	I	NRFD
5	I	CSR3	35	I	JPI0	65	I	MTST	95	–	NC
6	O	CMW0	36	I	JPI1	66	O	FSC	96	I	AHD
7	O	CMW1	37	I	YSYS	67	I	INFS	97	I	CHD
8	O	CMW2	38	I	PHEN	68	I	MPXT	98	I	YHD
9	O	CMW3	39	I	PD	69	I	MMTC	99	I	WEVN
10	–	NC	40	O	PED0	70	I	EXFS	100	I	OFSB
11	–	NC	41	O	PED1	71	I	CS0	101	I	SADM
12	I	YSR0	42	O	PED2	72	I	CS1	102	I	CLR
13	I	YSR1	43	O	PED3	73	I	WY7	103	O	CMPT
14	–	VDD (+5V)	44	–	VDD (+5V)	74	–	VDD (+5V)	104	–	VDD (+5V)
15	–	GND	45	–	GND	75	–	GND	105	–	GND
16	I	YSR2	46	O	COCK	76	I	WY6	106	O	RBT
17	I	YSR3	47	O	VCOO	77	I	WY5	107	O	ACK
18	O	YMW0	48	I	VCOI	78	I	WY4	108	I	YDLY
19	O	YMW1	49	O	OUT0	79	I	WY3	109	I	CTH
20	O	YMW2	50	I	IM0	80	I	WY2	110	–	NC
21	O	YMW3	51	O	OUT1	81	I	WY1	111	I	FNR
22	–	NC	52	I	IM1	82	I	WY0	112	I	WVMT
23	I	YSR4	53	–	AG	83	I	WCY7	113	I	WCDT
24	I	YSR5	54	O	OUT2	84	I	WCY6	114	I	WUV0
25	I	YSR6	55	I	IM2	85	I	WCY5	115	I	WUV1
26	I	YSR7	56	I	LIMI	86	I	WCY4	116	I	YEV0
27	O	YMW4	57	O	BPE0	87	I	WCY3	117	I	YEV1
28	O	YMW5	58	O	BPE1	88	I	WCY2	118	I	YEV2
29	O	YMW6	59	O	BPE2	89	I	WCY1	119	I	CEV0
30	O	YMW7	60	O	BPE3	90	I	WCY0	120	I	CEV1





INPUT

AG ; ANALOG GND
AHD ; H SYNC INPUT FOR APC
* 3 CEV0, 1 ; C NOISE REDUCER MODE SELECT INPUTS
CHD ; H SYNC INPUT FOR BURST DETECT
CLR ; DIRECT CLEAR INPUT
CMCK ; CLOCK INPUT FOR CHROMA SYSTEM
CSR0 – CSR3 ; CHROMA READ DATA INPUTS
* 1 CS0, 1 ; CHROMA SYSTEM SELECT INPUTS
CTH ; CHROMA TEST TERMINAL
DOP ; DROPOUT CONPENSATION PULSE INPUT
EXFS ; EXTERNAL Fsc INPUT
FNR ; NOISE REDUCER ON/OFF CONTROL INPUT
IM0 – IM2 ; AUDIO RANGE AMP INPUTS
INFS ; INTERNAL Fsc INPUT
JPI0, 1 ; ID CODE MONITOR INPUTS (D2, D3)
LIMI ; WINDOW COMPARATOR INPUT
MMTC, MPXT, MTST, PD ; TEST PIN
NRFD ; Y FIELD NOISE REDUCER DATA INPUT
OFSB ; OFF SET BINARY MODE INPUT
PHEN ; CHROMA APC SYSTEM CONTROL INPUT
PINV ; PEDESTAL CLAMP ERROR INVERT INPUT
SADM ; Y/C SIGNAL, H : COMPOSITE SIGNAL SELECT INPUT
SW1 ; AUDIO RANGE SWITCH INPUT
USC0 ; USER CODE FOR OPTION
VCOI ; VCO INPUT
WCDT ; WRITE FRAMING CODE TIMING INPUT
WCY0 – WCY7 ; L CHROMA SIGNAL, H : COMPOSITE SIGNAL INPUTS
WEVN ; WRITE EVEN/ODD FIELD MONITOR INPUT
WUV0, 1 ; WRITE U/V TIMING INPUTS
MVMT ; WRITE VIDEO MUTE
WY0 – WY7 ; WRITE Y SIGNAL INPUTS
YDLY ; Y DELAY ADJUST INPUT
* 2 YEV0 – YEV2 ; Y NOISE REDUCER MODE SELECT INPUTS
YHD ; Y H DRIVE PULSE INPUT
YMCK ; Y MEMORY CONTROL CLOCK INPUT
YSR0 – YSR7 ; Y MEMORY DATA INPUTS
YSYS ; Y DELAY ADJUST INPUT (H : 3.58MHz C SYSTEM, L : 4.43MHz C SYSTEM)

OUTPUT

ACK : CLOCK OUTPUT FOR APC (H : B/W MODE, L : COLOR MODE)
BPE0 – BPE3 : PHASE ERROR OUTPUTS FOR APC (OFFSET BINARY OUTPUTS)
CMPT : MONITOR TERMINAL FOR TEST
CMW0 – CMW3 : CHROMA WRITE DATA OUTPUTS
COCK : VCO OUT CLOCK OUTPUT
FSC : 1/4 CLOCK OUTPUT
LIMO : WINDOW COMPARATOR OUTPUT
MPL : PHASE COMPARATOR ERROR OUTPUT
OUT0 – OUT2 : AUDIO RANGE AMP OUTPUTS
PED0 – PED3 : PEDESTAL CLAMP ERROR OUTPUTS
RBT : MONITOR PIN FOR TEST
VCOO : VCO OUTPUT
YMW0 – YMW7 : Y MEMORY DATA OUTPUTS

* 1 CHROMA SYSTEM MODE SELECTION

CS1	CS0	MODE
0	0	NTSC
0	1	PAL
1	0	CHROMA BASE BAND INPUT
1	1	PROHIBITION

* 3 CHROMA SIGNAL NOISE REDUCER SELECTION

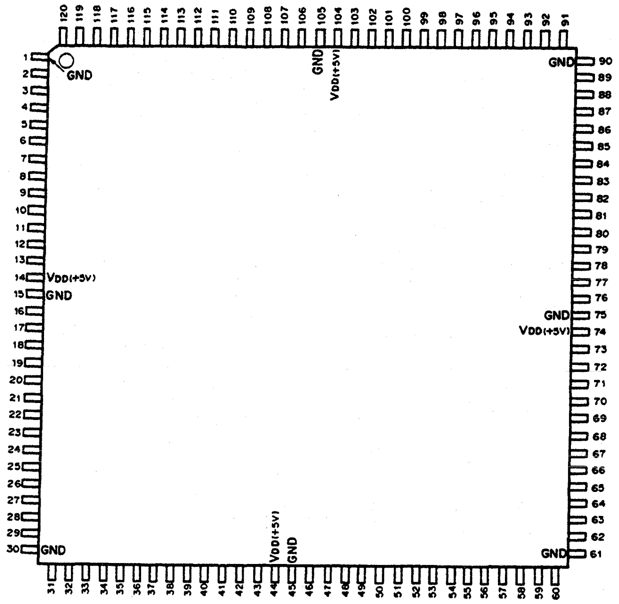
CEV0	CEV1	OPERATION
0	0	NOISE REDUCER (SOFT)
0	1	NOISE REDUCER (MIDDLE)
1	0	NOISE REDUCER (STRONG)
1	1	NO OPERATION

0 : LOW LEVEL
1 : HIGH LEVEL

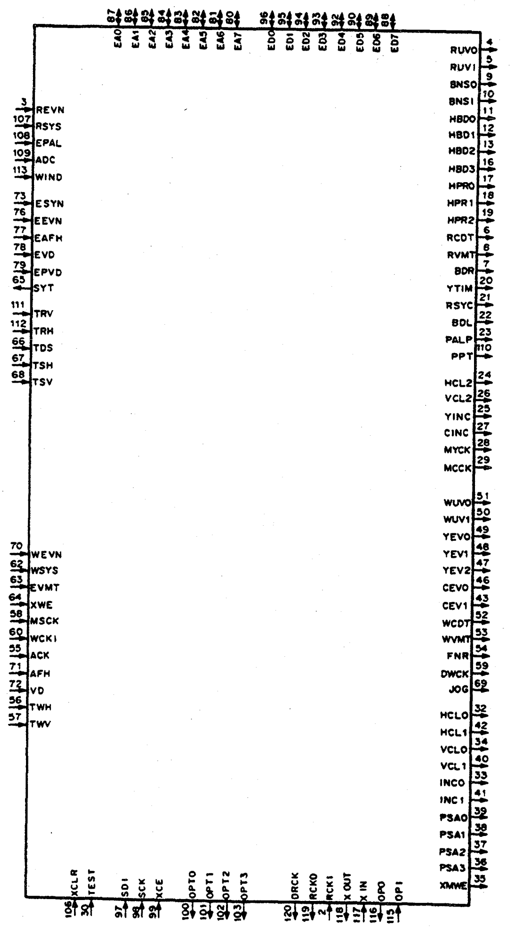
* 2 Y SIGNAL NOISE REDUCER SELECTION

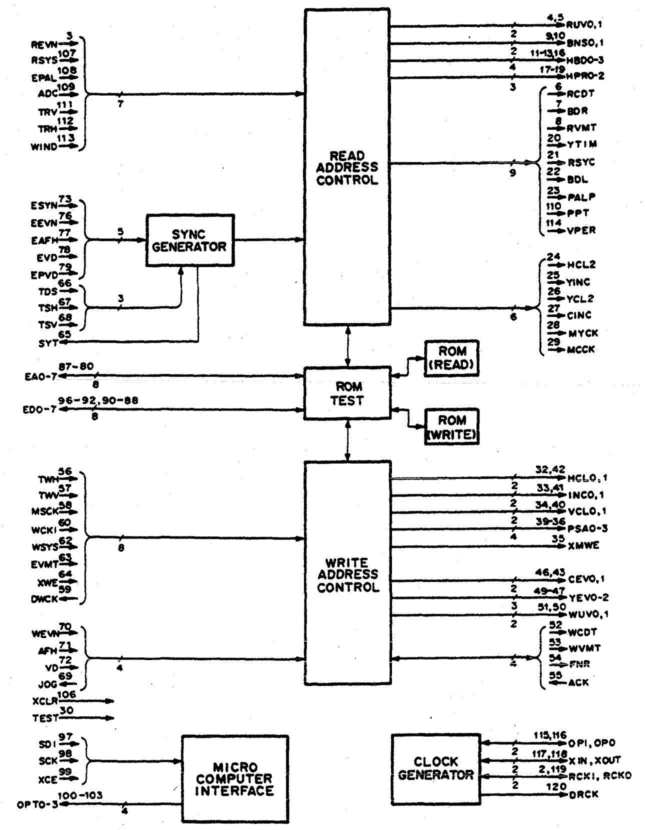
YEV0	YEV1	YEV2	OPERATION
0	0	0	NOISE REDUCER (SOFT)
0	0	1	NOISE REDUCER (MIDDLE)
0	1	0	NOISE REDUCER (STRONG)
0	1	1	AFTER IMAGE
1	0	0	VERTICAL FILTER
1	0	1	FADE IN/OUT
1	1	0	SELECT AFTER IMAGE
1	1	1	NO OPERATION

CXD1228Q (SONY)
C-MOS MEMORY ADDRESS CONTROLLER
– TOP VIEW –


GND
VDD(+5V)
GND
GND
VDD(+5V)
GND
GND
VDD(+5V)
GND
GND

PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	–	GND	31	–	GND	61	–	GND	91	–	GND
2	I	RCK1	32	O	HCL0	62	I	WSYS	92	I/O	ED4
3	I	REVN	33	O	INC0	63	I	EVMT	93	I/O	ED3
4	O	RUV0	34	O	VCL0	64	I	XWE	94	I/O	ED2
5	O	RUV1	35	O	XMWE	65	O	SYT	95	I/O	ED1
6	O	RCDT	36	O	PSA3	66	I	TDS	96	I/O	ED0
7	O	BDR	37	O	PSA2	67	I	TSH	97	I	SD1
8	O	RVMT	38	O	PSA1	68	I	TSV	98	I	SDK
9	O	BNS0	39	O	PSA0	69	O	JOG	99	I	XCE
10	O	BNS1	40	O	VCL1	70	I	WEVN	100	O	OPT0
11	O	HBD0	41	O	INC1	71	I	AFH	101	O	OPT1
12	O	HBD1	42	O	HCL1	72	I	VD	102	O	OPT2
13	O	HBD2	43	O	CEV1	73	I	ESYN	103	O	OPT3
14	–	VDD (+5V)	44	–	VDD (+5V)	74	–	VDD (+5V)	104	–	VDD (+5V)
15	–	GND	45	–	GND	75	–	GND	105	–	GND
16	O	HBD3	46	O	CEV0	76	I	EEVN	106	I	XCLR
17	O	HPR0	47	O	YEV2	77	I	EAFH	107	I	RSYS
18	O	HPR1	48	O	YEV1	78	I	EVD	108	I	EPAL
19	O	HPR2	49	O	YEV0	79	I	EPVD	109	I	ADC
20	O	YTIM	50	O	WUV1	80	I/O	EA7	110	O	PPT
21	O	RSYC	51	O	WUV0	81	I/O	EA6	111	I	TRV
22	O	BDL	52	O	WCDT	82	I/O	EA5	112	I	TRH
23	O	PALP	53	O	WVMT	83	I/O	EA4	113	I	WIND
24	O	HCL2	54	O	FNR	84	I/O	EA3	114	O	VPER
25	O	YINC	55	I	ACK	85	I/O	EA2	115	I	OPI
26	O	VCL2	56	I	TWH	86	I/O	EA1	116	O	OPO
27	O	CINC	57	I	TWV	87	I/O	EA0	117	I	XIN
28	O	MYCK	58	I	MSCK	88	I/O	ED7	118	O	XOUT
29	O	MCCK	59	O	DWCK	89	I/O	ED6	119	O	RCKO
30	I	TST	60	I	WCKI	90	I/O	ED5	120	O	DRCK


REVN
RSYS
EPAL
ADC
WIND
ESYN
EEVN
EAFH
EVD
EPVD
SYT
TRV
TRH
TDS
TSH
TSV
WEVN
WSYS
EVMT
XWE
MSCK
WCKI
ACK
AFH
VD
TWH
TWV
RUV0
RUV1
BNS0
BNS1
HBD0
HBD1
HBD2
HBD3
HPR0
HPR1
HPR2
RCDT
RVMT
BDR
YTIM
RSYC
BDL
PALP
PPT
HCL2
VCL2
YINC
CINC
MYCK
MCCK
WUV0
WUV1
YEV0
YEV1
YEV2
CEV0
CEV1
WCDT
WVMT
FNR
DWCK
JOG
HCL0
HCL1
VCL0
VCL1
INC0
INC1
PSA0
PSA1
PSA2
PSA3
XMWE
XCLR
TEST
SDI
SCK
XCE
OPT0
OPT1
OPT2
OPT3
DRCK
RCKO
RCKI
XOUT
XIN
OPO
OPI


READ ADDRESS CONTROL
SYNC GENERATOR
ROM TEST
ROM (READ)
ROM (WRITE)
WRITE ADDRESS CONTROL
MICRO COMPUTER INTERFACE
CLOCK GENERATOR
EA0-7
ED0-7
OPTO-3

INPUT
ACK : CLOCK INPUT FOR APC (H : B/W MODE. L : COLOR MODE)
ADC : CHROMA ADDRESS CONTROL INPUT
AFH : AFC H DRIVE INPUT
EAFH : EXTERNAL SYNC MODE H DRIVE INPUT
EEVN : EXTERNAL SYNC MODE EVEN/ODD SELECT INPUT
EPAL : EXTERNAL SYNC MODE PAL COLOR ID INPUT
EPVD : REFERENCE VD
ESYN : EXTERNAL SYNC MODE CHROMA SYNC INPUT
EVD : EXTERNAL SYNC MODE V DRIVE INPUT
EVMT : EXTERNAL VIDEO MUTE INPUT (H : MUTE. L : NORMAL)
MSCK : MASTER CLOCK INPUT
OPI : INVERTER INPUT
RCKI : READ CLOCK INPUT
REVN : READ EVEN/ODD FIELD MONITOR INPUT
RSYS : READ SYNC SELECT INPUT (H : NTSC. L : PAL)
SDI : SERIAL DATA INPUT
SDK : SERIAL CLOCK INPUT
TDS. TRH. TRV. TSH
TST. TSV. TWH. TWV
: TEST PIN
VD : VERTICAL SYNC DETECT INPUT
WCKI : WRITE CLOCK INPUT
WEVN : WRITE EVEN/ODD FIELD MONITOR INPUT
WIND : WINDOW COMPARATOR INPUT FOR V-PLL
WSYS : WRITE SYNC SELECT INPUT (H : NTSC. L : PAL)
XCE : CHIP ENABLE INPUT
XCLR : DIRECT CLEAR INPUT
XIN : CLOCK INPUT
XWE : WRITE ENABLE INPUT

＊1 SOLORIZATION RESOLUTION

INPUTS		OUTPUTS				
BNS0	BNS1	RY0	RY1	RY2	RY3	RY4
0	0	0	0	1	X	X
0	1	0	0	0	1	X
1	0	0	0	0	0	1
1	1	X	X	X	X	X

＊2 CHROMA SIGNAL NOISE REDUCER SELECTION

CEV0	CEV1	OPERATION
0	0	NOISE REDUCER (SOFT)
0	1	NOISE REDUCER (MIDDLE)
1	0	NOISE REDUCER (STRONG)
1	1	NO OPERATION

＊3 U-AXIS BORDER LEVEL

HBD1	HBD0	LEVEL
0	0	20 IRE
0	1	– 20 IRE
1	0	– 30 IRE
1	1	0 IRE

＊4 V-AXIS BORDER LEVEL

HBD3	HBD2	LEVEL
0	0	20 IRE
0	1	– 20 IRE
1	0	– 30 IRE
1	1	0 IRE

OUTPUT
BDL : Y BORDER LEVEL OUTPUT
BDR : BORDER OUTPUT
＊1 BNS0. 1 : SOLARIZATION CONROL OUTPUTS
＊2 CEV0. 1 : C NOISE REDUCER MODE SELECT OUTPUTS
CINC : READ PORT CHROMA INCREMENT OUTPUT
DRCK : DELAYED READ CLOCK OUTPUT
DWCK : DELAYED WRITE CLOCK OUTPUT
FNR : NOISE REDUCER ON/OFF CONTROL OUTPUT
＊3 HBD0. 1 : U-AXIS BORDER LEVEL OUTPUTS
＊4 HBD2. 3 : V-AXIS BORDER LEVEL OUTPUTS
HCL0 : WRITE PORT HORIZONTAL CLEAR OUTPUT
HCL1. 2 : READ PORT HORIZONTAL CLEAR OUTPUTS
＊5 HPR0 – HPR2 : H PROCESS OUTPUTS
INC0 : WRITE PORT LINE INCREMENT OUTPUT
INC1 : READ PORT LINE INCREMENT OUTPUT
JOG : REFERENCE CONTROL OUTPUT
MCCK : READ PORT CHROMA CLOCK OUTPUT
MYCK : READ PORT Y CLOCK OUTPUT
OPO : INVERTER OUTPUT
OPT0 – OPT3 : OPTION OUTPUTS
PALP : PAL PHASE CONTROL OUTPUT
PPT : SMALL PICTURE TIMING OUT
PSA0 – PSA3 : WRITE PORT TRANSFER SYNC OUTPUTS
RCDT : READ FRAIMIG CODE TIMING OUTPUT
RCK0 : READ CLOCK OUTPUT
RUV0. 1 : READ U/V TIMING OUTPUTS
RVMT : READ MUTING OUTPUT
SYT : MONITOR PIN FOR TEST
VCL0 : WRITE PORT VERTICAL CLEAR OUTPUT
VCL1. 2 : READ PORT VERTICAL CLEAR OUTPUTS
VPER : V PHASE COMPARATOR OUTPUT
WCDT : WRITE FRAMING CODE TIMING OUTPUT
WUV0. 1 : WRITE U/V TIMING OUTPUTS
WVMT : WRITE VIDEO MUTE OUTPUT
XMWE : WRITE PORT WRITE ENABLE OUTPUT
XOUT : CLOCK OUTPUT
＊6 YEV0 – YEV2 : Y NOISE REDUCER MODE SELECT OUTPUTS
YINC : READ PORT Y INCREMENT OUTPUT
YTIM : Y TIMING CONTROL OUTPUT

INPUT/OUTPUT
EA0 – EA7 : ROM TEST TERMINAL INPUTS/OUTPUTS
ED0 – ED7 : ROM TEST TERMINAL INPUTS/OUTPUTS

＊5 H PROCESS MODE SELECTION

HPR2	HPR1	HPR0	OPERATION
0	0	0	V-ENHANCE (SOFT)
0	0	1	V-ENHANCE (SOFT)
0	1	0	V-ENHANCE (MIDDLE)
0	1	1	V-ENHANCE (STRONG)
1	0	0	MIX RATIO H_T:H_P=1:1
1	0	1	MIX RATIO H_T:H_P=1:3
1	1	0	MIX RATIO H_T:H_P=3:1
1	1	1	NO PLAY

0 : LOW LEVEL
1 : HIGH LEVEL

H_T = THROUGH
H_P = 1H DELAY

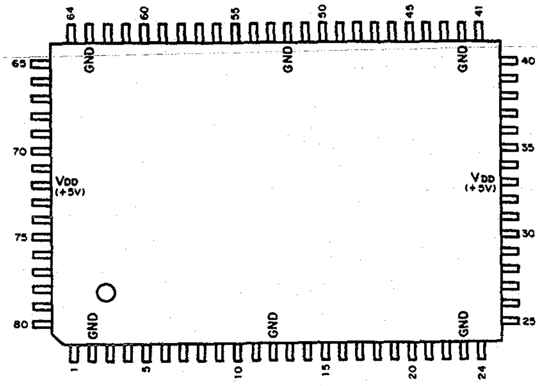
＊6 Y SIGNAL NOISE REDUCER SELECTION

YEV0	YEV1	YEV2	OPERATION
0	0	0	NOISE REDUCER (SOFT)
0	0	1	NOISE REDUCER (MIDDLE)
0	1	0	NOISE REDUCER (STRONG)
0	1	1	AFTER IMAGE
1	0	0	VERTICAL FILTER
1	0	1	FADE IN/OUT
1	1	0	SELECT AFTER IMAGE
1	1	1	NO OPERATION

CXD1227Q (SONY)

C-MOS DIGITAL CHROMA ENCODER/VERTICAL ENHANCER

– TOP VIEW –


64
60
55
50
45
41
65
70
75
80
40
35
30
25
1
5
10
15
20
24
GND
GND
GND
GND
GND
GND
VDD (+5V)
VDD (+5V)

PIN ASSIGNMENT (VDD = + 5V)

PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	O	TST0	21	I	CMR3	41	I	HPR2	61	I	CCKI
2	–	GND	22	I	CMR2	42	–	GND	62	O	CCKO
3	O	TST1	23	–	GND	43	O	DOC	63	–	GND
4	O	RC0	24	I	CMR1	44	I	HPR1	64	O	XOUT
5	O	RC1	25	I	CMR0	45	I	HPR0	65	I	XIN
6	O	RC2	26	O	FRM0	46	I	HBD3	66	O	USCO
7	O	RC3	27	O	FRM1	47	I	HBD2	67	I	CLRI
8	O	RC4	28	O	JPI0	48	I	HBD1	68	O	PCOM
9	O	RC5	29	O	JPI1	49	I	HBD0	69	I	CTLZ
10	O	RC6	30	O	RFSC	50	I	BNS1	70	I	FSIG
11	O	RC7	31	I	CS0	51	I	BNS0	71	I	FREF
12	–	GND	32	I	CS1	52	–	GND	72	O	RY0
13	I	YMR7	33	–	VDD	53	I	YCKI	73	–	VDD
14	I	YMR6	34	I	SDAM	54	I	RVMT	74	O	RY1
15	I	YMR5	35	I	PALP	55	I	BDR	75	O	RY2
16	I	YMR4	36	I	OFSB	56	I	YCFR	76	O	RY3
17	I	YMR3	37	I	BDL7	57	I	RCDT	77	O	RY4
18	I	YMR2	38	I	BDL6	58	I	RUV1	78	O	RY5
19	I	YMR1	39	I	RSYC	59	I	RUV0	79	O	RY6
20	I	YMR0	40	I	YTIM	60	O	REVN	80	O	RY7

INPUT

	BDR	: BORDER TIMING INPUT
*1	BDL6, 7	: Y BORDER LEVEL SELECT INPUTS
*2	BNS0, 1	: SOLORIZATION RESOLUTION SELECT
	CCKI	: CHROMA CLOCK INPUT (4fsc)
	CLRI	: CLEAR INPUT
	CMR0 – 3	: CHROMA DATA INPUTS
*3	CS0, 1	: CHROMA SYSTEM SELECT INPUTS
	CTLZ	: PHASE COMPARATOR OUT CONTROL INPUT
	FREF	: PHASE COMPARATOR REFERRENCE SIGNAL INPUT
	FSIG	: PHASE COMPARATOR SIGNAL INPUT
*4	HBD0, 1	: U-AXIS BORDER LEVEL INPUTS
*5	HBD2, 3	: V-AXIS BORDER LEVEL INPUTS
*6	HPR0 – 2	: H PROCESS INPUTS
	OFSB	: OFF SET BINARY MODE INPUT
	PALP	: PAL PHASE CONTROL INPUT
	RCDT	: READ FRAMING CODE TIMING INPUT
	RSYC	: READ SYNC INPUT
	RUV0 – 1	: READ U/V TIMING INPUTS
	RVMT	: READ VIDEO MUTE INPUT
	SDAM	: D/A MODE SELECT INPUT
	XIN	: CHROMA CLOCK INPUT FOR OSCILLATOR
	YCKI	: Y CLOCK INPUT (910f$_H$)
	YCFR	: Y/C FRAMING ON/OFF SELECT INPUT
	YMR0 – 7	: Y DATA INPUTS
	YTIM	: Y TIMING CONTROL INPUT

OUTPUT

CCKO	: CHROMA CLOCK OSCILLATOR OUTPUT (4fsc)
DOC	: DROP OUT CONTROL MONITOR OUTPUT
FRM0, 1	: CHROMA FRAMING CODE OUTPUTS
JPI0, 1	: ID CODE MONITOR OUTPUTS (D2, D3)
PCOM	: PHASE COMPARATOR OUTPUT
RC0 – 7	: READ CHROMA D/A OUTPUTS
REVN	: READ EVEN/$\overline{\text{ODD}}$ FIELD MONITOR OUTPUT
RFSC	: READ fsc OUTPUT
RY0 – 7	: READ Y D/A OUTPUTS
TST0, 1	: TEST TERMINALS
USCO	: USER CODE FOR OPTION
XOUT	: CHROMA CLOCK OUTPUT FOR OSCILLATOR

TABLE 6
*6 H PROCESS MODE SELECTION

HPR2	HPR1	HPR0	OPERATION
0	0	0	V-ENHANCE (SOFT)
0	0	1	V-ENHANCE (SOFT)
0	1	0	V-ENHANCE (MIDDLE)
0	1	1	V-ENHANCE (STRONG)
1	0	0	MIX RATIO H_T:H_P=1:1
1	0	1	MIX RATIO H_T:H_P=1:3
1	1	0	MIX RATIO H_T:H_P=3:1
1	1	1	NO PLAY

0 : LOW LEVEL
1 : HIGH LEVEL

H_T = THROUGH
H_P = 1H DELAY

TABLE 1
*1 BORDER LEVEL

BDL7	BDL6	LEVEL
0	0	8H (– 50IRE)
0	1	48H (– 100IRE)
1	0	C8H (CLAMP LEVEL)
1	1	C8H (0IRE)

TABLE 2
*2 SOLORIZATION RESOLUTION

INPUTS		OUTPUTS				
BNS0	BNS1	RY0	RY1	RY2	RY3	RY4
0	0	0	0	1	X	X
0	1	0	0	0	1	X
1	0	0	0	0	0	1
1	1	X	X	X	X	X

TABLE 3
*3 CHROMA SYSTEM MODE SELECTION

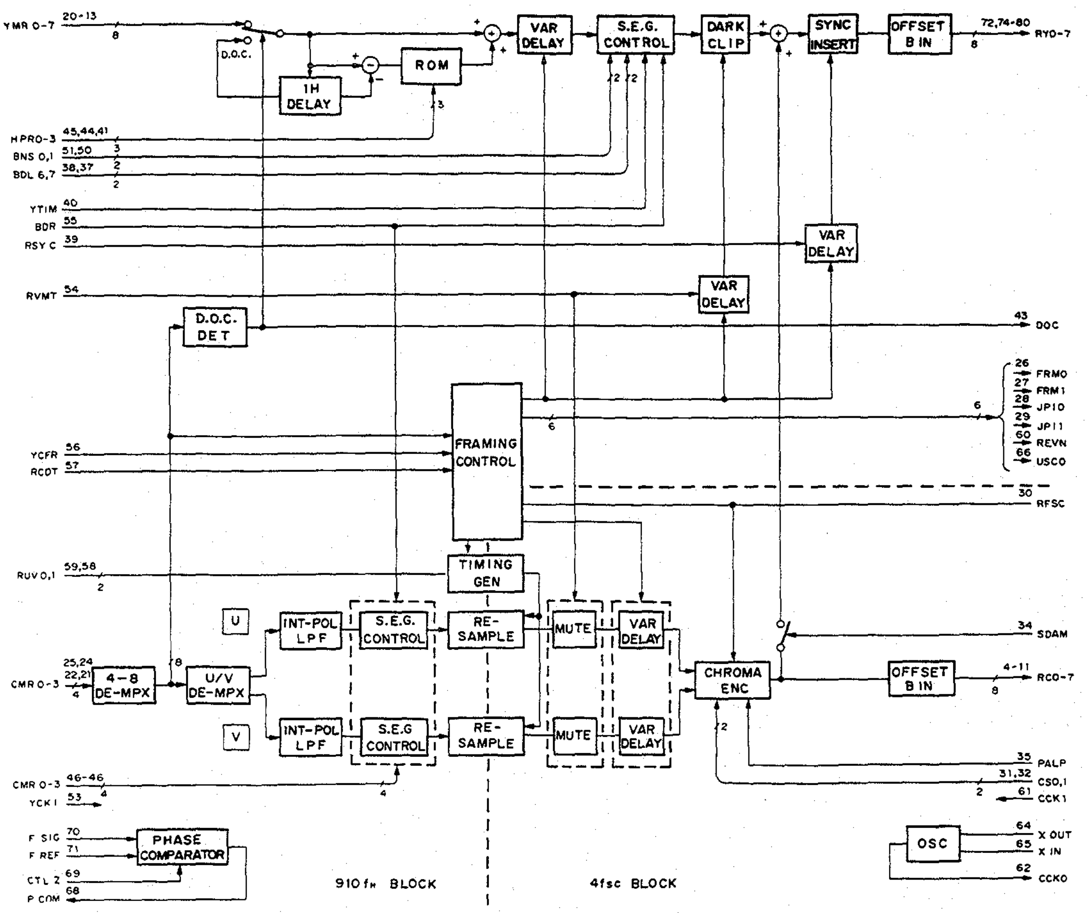
CS1	CS0	MODE
0	0	NTSC
0	1	PAL
1	0	CHROMA BASE BAND OUT
1	1	(PAL)

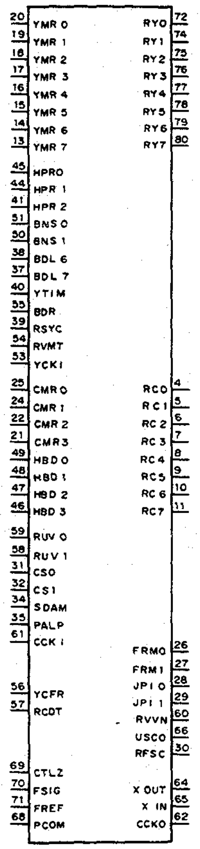
TABLE 4
*4 U-AXIS BORDER LEVEL

HBD1	HBD0	LEVEL
0	0	20 IRE
0	1	– 20 IRE
1	0	– 30 IRE
1	1	0 IRE

TABLE 5
*5 V-AXIS BORDER LEVEL

HBD3	HBD2	LEVEL
0	0	20 IRE
0	1	– 20 IRE
1	0	– 30 IRE
1	1	0 IRE

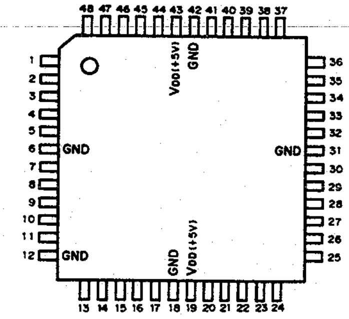

YMR 0-7
20-13
8
D.O.C.
1H DELAY
ROM
3
VAR DELAY
S.E.G. CONTROL
2
2
DARK CLIP
SYNC INSERT
OFFSET B IN
72,74-80
8
RY0-7
HPR0-3
45,44,41
3
BNS 0,1
51,50
2
BDL 6,7
38,37
2
YTIM
40
BDR
55
RSY C
39
VAR DELAY
RVMT
54
VAR DELAY
D.O.C. DET
43
DOC
FRAMING CONTROL
6
6
26 FRM0
27 FRM1
28 JPI0
29 JPI1
60 REVN
66 USCO
30
RFSC
YCFR
56
RCDT
57
RUV 0,1
59,58
2
TIMING GEN
U
V
INT-POL LPF
INT-POL LPF
S.E.G. CONTROL
S.E.G CONTROL
RE-SAMPLE
RE-SAMPLE
MUTE
MUTE
VAR DELAY
VAR DELAY
CMR 0-3
25,24
22,21
4
4-8 DE-MPX
8
U/V DE-MPX
34
SDAM
CHROMA ENC
OFFSET B IN
4-11
8
RC0-7
2
35
PALP
31,32
2
CS0,1
61
CCK I
CMR 0-3
46-46
4
4
YCK I
53
F SIG
70
F REF
71
PHASE COMPARATOR
CTL Z
69
P COM
68
OSC
64
X OUT
65
X IN
62
CCKO
910fH BLOCK
4fsc BLOCK


20 YMR 0
19 YMR 1
18 YMR 2
17 YMR 3
16 YMR 4
15 YMR 5
14 YMR 6
13 YMR 7
45 HPR0
44 HPR 1
41 HPR 2
51 BNS 0
50 BNS 1
38 BDL 6
37 BDL 7
40 YTIM
55 BDR
39 RSYC
54 RVMT
53 YCKI
25 CMR 0
24 CMR 1
22 CMR 2
21 CMR3
49 HBD 0
48 HBD 1
47 HBD 2
46 HBD 3
59 RUV 0
58 RUV 1
31 CS0
32 CS1
34 SDAM
35 PALP
61 CCK I
56 YCFR
57 RCDT
69 CTLZ
70 FSIG
71 FREF
68 PCOM
RY0 72
RY1 74
RY2 75
RY3 76
RY4 77
RY5 78
RY6 79
RY7 80
RC0 4
RC1 5
RC2 6
RC3 7
RC4 8
RC5 9
RC6 10
RC7 11
FRM0 26
FRM1 27
JPI 0 28
JPI 1 29
RVVN 60
USCO 66
RFSC 30
X OUT 64
X IN 65
CCKO 62

CXD1229Q (SONY)
MB87647 (FUJITSU)

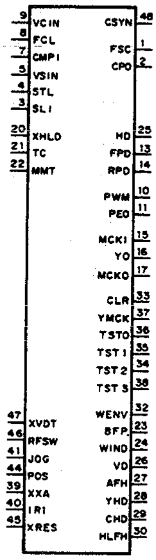
C-MOS AUTOMATIC FREQUENCY CONTROL (AFC) /SYNC SEPARATOR

– TOP VIEW –


48 47 46 45 44 43 42 41 40 39 38 37
1 2 3 4 5 6 7 8 9 10 11 12
36 35 34 33 32 31 30 29 28 27 26 25
13 14 15 16 17 18 19 20 21 22 23 24
GND
GND
GND
VDD(+5V)
GND
VDD(+5V)
GND

PIN ASSIGNMENT (V$_{DD}$ = +5V)

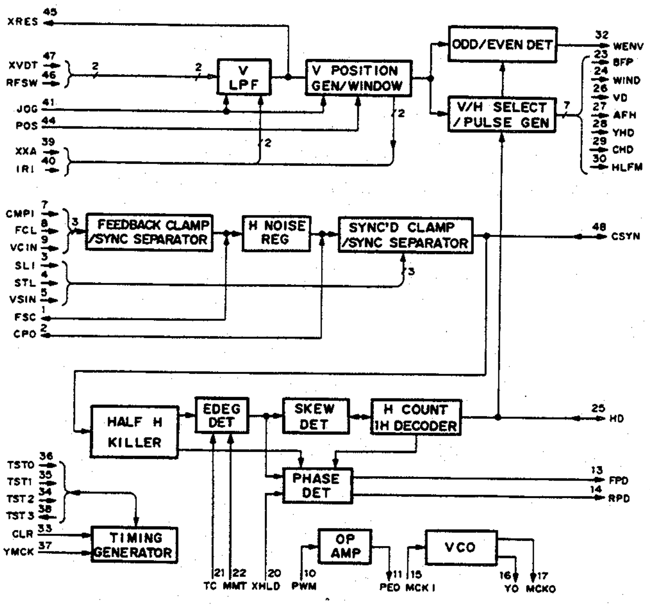
PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	I/O	FCS	13	O	FPD	25	O	HD	37	I	YMCK
2	I/O	CPO	14	O	RPD	26	O	VD	38	O	TST3
3	I	SLI	15	I	MCKI	27	O	AFH	39	I/O	XXA
4	I	STL	16	O	YO	28	O	YHD	40	I/O	IR1
5	I	VSIN	17	O	MCKO	29	O	CHD	41	I	JOG
6	–	GND	18	–	GND	30	O	HLFH	42	–	GND
7	I	CMPI	19	–	V$_{DD}$	31	–	GND	43	–	V$_{DD}$
8	I	FCL	20	I	XHLD	32	O	WEVN	44	I	POS
9	I	VCIN	21	O	TC	33	I	CLR	45	O	XRES
10	I	PWM	22	I	MMT	34	I	TST2	46	I	RFSW
11	O	PEO	23	O	BFP	35	I	TST1	47	I	XVDT
12	–	GND	24	O	WIND	36	I	TST0	48	O	CSYN


9 VCIN
8 FCL
7 CMPI
5 VSIN
4 STL
3 SLI
20 XHLD
21 TC
22 MMT
47 XVDT
46 RFSW
41 JOG
44 POS
39 XXA
40 IR1
45 XRES
CSYN 48
FSC 1
CPO 2
HD 25
FPD 13
RPD 14
PWM 10
PEO 11
MCKI 15
YO 16
MCKO 17
CLR 33
YMCK 37
TSTO 36
TST1 35
TST2 34
TST3 38
WENV 32
BFP 23
WIND 24
VD 26
AFH 27
YHD 28
CHD 29
HLFH 30

INPUT
CLR : DIRECT CLEAR INPUT
CMPI : FEED BACK CLAMP SLICE LEVEL INPUT
FCL : FEED BACK CLAMP SYNC CHIP LEVEL INPUT
JOG : REFERENCE CONTROL INPUT
MCKI : CLOCK (VCO) INVERTER INPUT
MMT : MONO MULTI TEST PIN (H : NORMAL) INPUT
POS : PHASE REFERENCE SELECT
PWM : OP AMP INPUT
RFSW : RF SW PULSE INPUT
SLI : SYNC CLAMP SLICE LEVEL INPUT
STL : SYNC CLAMP SYNC CHIP LEVEL INPUT
TST0 : L : NORMAL/H : TEST MODE INPUT
TST1, 2 : AFC LOCK PHASE COARSE ADJUST INPUTS
VCIN : FEED BACK CLAMP VIDEO INPUT
VSIN : SYNC CLAMP VIDEO INPUT
XHLD : H : AFC ERROR ACTIVE/L : AFC ERROR HOLD INPUT
XVDT : V DETECT COMPOSITE SYNC INPUT
YMCK : MASTER CLOCK INPUT

OUTPUT
AFH : AFC H DRIVE OUTPUT
BFP : BURST FLAG PULSE OUTPUT
CHD : H SYNC OUTPUT FOR BURST DETECT
FPD : AFC SUB LOOP PHASE ERROR OUTPUT
HLFH : $1/2f_H$ (≒ 7.5 kHz) OUTPUT
MCKO : CLOCK (VCO) INVERTER OUTPUT ($910f_H$)
PEO : OP AMP OUTPUT
RPD : AFC MAIN LOOP PHASE ERROR OUTPUT
TST3 : L : NORMAL, H : TEST MODE OUTPUT
VD : VERTICAL SYNC DETECT OUTPUT
WEVN : WRITE EVEN/ODD FIELD DETECT OUTPUT
WIND : WINDOW COMPARATOR OUTPUT FOR V-PLL
XRES : V DETECT LPF OUTPUT
YO : CLOCK (VCO) INVERT OUTPUT
YHD : PEDESTAL CLAMP TIMING OUTPUT

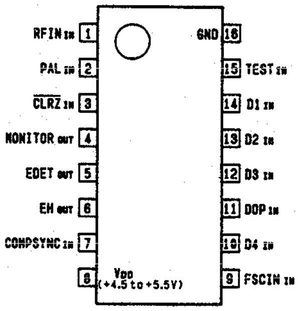
INPUT/OUTPUT
CPO : CLAMP PULSE INPUT/OUTPUT
CSYN : CLAMP SYNC SEPARATE INPUT/OUTPUT
FCS : FEED BACK CLAMP SYNC SEPARATE INPUT/OUTPUT
HD : AFC H DIRECT INPUT/OUTPUT
IR1 : MONITOR PIN FOR TEST INPUT/OUTPUT
TC : AFC LOCK PHASE FINE ADJUST INPUT/OUTPUT
XXA : MONITOR PIN FOR TEST INPUT/OUTPUT

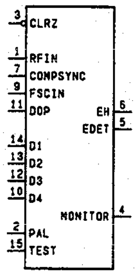

XRES 45
XVDT 47
RFSW 46
JOG 41
POS 44
XXA 39
IR1 40
V LPF
V POSITION GEN/WINDOW
ODD/EVEN DET
V/H SELECT /PULSE GEN
32 WENV
23 BFP
24 WIND
26 VD
27 AFH
28 YHD
29 CHD
30 HLFM
CMPI 7
FCL 8
VCIN 9
SLI 3
STL 4
VSIN 5
FSC 1
CPO 2
FEEDBACK CLAMP /SYNC SEPARATOR
H NOISE REG
SYNC'D CLAMP /SYNC SEPARATOR
48 CSYN
HALF H KILLER
EDEG DET
SKEW DET
H COUNT 1H DECODER
25 HD
PHASE DET
13 FPD
14 RPD
TSTO 36
TST1 35
TST2 34
TST3 38
CLR 33
YMCK 37
TIMING GENERATOR
OP AMP
VCO
21 TC
22 MMT
20 XHLD
10 PWM
11 PEO
15 MCK I
16 YO
17 MCKO

CXD2107M (SONY) FLAT PACKAGE

C-MOS DEFINITION DETECTOR

– TOP VIEW –

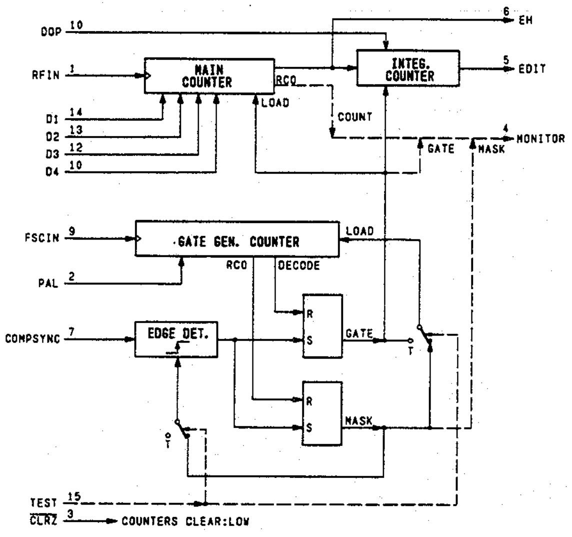

RFIN IN 1
PAL IN 2
CLRZ IN 3
MONITOR OUT 4
EDET OUT 5
EH OUT 6
COMPSYNC IN 7
8 VDD (+4.5 to +5.5V)
GND 16
15 TEST IN
14 D1 IN
13 D2 IN
12 D3 IN
11 DOP IN
10 D4 IN
9 FSCIN IN

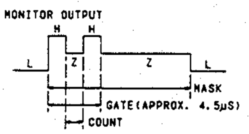

3 CLRZ
1 RFIN
7 COMPSYNC
9 FSCIN
11 DOP
14 D1
13 D2
12 D3
10 D4
2 PAL
15 TEST
EH 6
EDET 5
MONITOR 4

INPUT
CLRZ : CLEAR SIGNAL INPUT FOR INTERNAL COUNTERS
COMPSYNC: COMPOSITE SYNC INPUT
D1–D4 : LOAD DATA INPUTS FOR MAIN COUNTER (D0=HIGH, FIXED DATA)
DOP : DROPOUT COMPENSATION PULSE INPUT
FSCIN : COLOR SUBCARRIER INPUT. NTSC=3.579545MHz, PAL=4.433619MHz
PAL : OPERATION MODE SELECT INPUT. HIGH=PAL, LOW=NTSC
RFIN : PLAYBACK Y RF SIGNAL INPUT
TEST : TEST CONTROL INPUT. NORMAL=LOW

OUTPUT
EDET : E* MODE DETECTION OUTPUT, CONTINUOUS 16H
EH : E* MODE DETECTION OUTPUT, DISTINGUISH IN 1H
MONITOR : MONITOR OUTPUT OF COUNT, GATE, AND MASK PULSES

NOTE
E* : EXTENDED DEFINITION

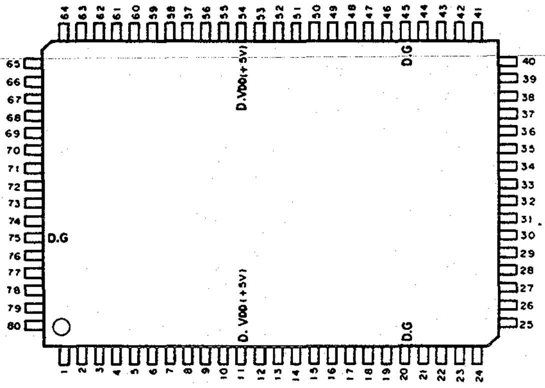

DOP 10
RFIN 1
D1 14
D2 13
D3 12
D4 10
MAIN COUNTER
RCO
LOAD
COUNT
INTEG. COUNTER
6 EH
5 EDIT
4 MONITOR
GATE
MASK
FSCIN 9
PAL 2
GATE GEN. COUNTER
RCO
DECODE
LOAD
COMPSYNC 7
EDGE DET.
R
S
GATE
R
S
MASK
T
T
TEST 15
CLRZ 3
COUNTERS CLEAR:LOW


MONITOR OUTPUT
H
H
L
Z
Z
L
MASK
GATE (APPROX. 4.5μS)
COUNT

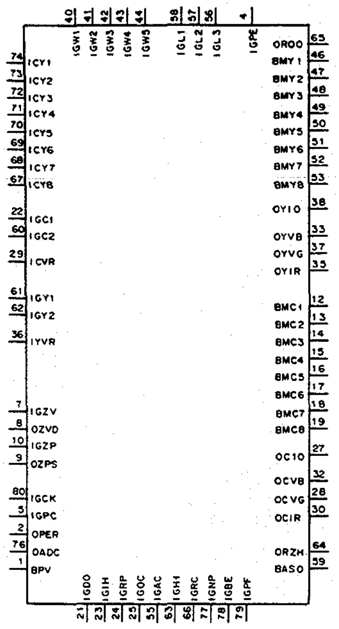
CXD2105AQ (SONY)

C-MOS DIGITAL COMB FILTER FOR VTR'S

– TOP VIEW –


D.VDD(+5V)
D.G
D.G
D. VDD(+5V)
D.G

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	BPV	21	I	IGD0	41	I	IGW2	61	I	IGY1
2	O	OPER	22	I	IGC1	42	I	IGW3	62	I	IGY2
3	–	A.VDD P	23	I	IGIH	43	I	IGW4	63	I	IGH1
4	I	IGPE	24	I	IGRP	44	I	IGW5	64	O	ORZH
5	I	IGPC	25	I	IGOC	45	–	D.G	65	O	OR00
6	–	A.G P	26	–	A.VDD C	46	I/O	BMY1	66	I	IGRC
7	I	IGZV	27	O	OCIO	47	I/O	BMY2	67	I	IYC8
8	O	OZVD	28	O	OCVG	48	I/O	BMY3	68	I	IYC7
9	O	OZPS	29	–	ICVR	49	I/O	BMY4	69	I	IYC6
10	I	IGZP	30	O	OCIR	50	I/O	BMY5	70	I	IYC5
11	–	D.VDD	31	–	A.G C	51	I/O	BMY6	71	I	IYC4
12	I/O	BMC1	32	O	OCVB	52	I/O	BMY7	72	I	IYC3
13	I/O	BMC2	33	O	OYVB	53	I/O	BMY8	73	I	IYC2
14	I/O	BMC3	34	–	A.G Y	54	–	D.VDD	74	I	IYC1
15	I/O	BMC4	35	O	OYIR	55	I	IGAC	75	–	D.G
16	I/O	BMC5	36	–	IYVR	56	I	IGL3	76	O	OADC
17	I/O	BMC6	37	O	OYVG	57	I	IGL2	77	I	IGNP
18	I/O	BMC7	38	O	OYIO	58	I	IGL1	78	I	IGBE
19	I/O	BMC8	39	–	A.VDD Y	59	I/O	BASO	79	I	IGPF
20	–	D.G	40	I	IGW1	60	I	IGC2	80	I	IGCK

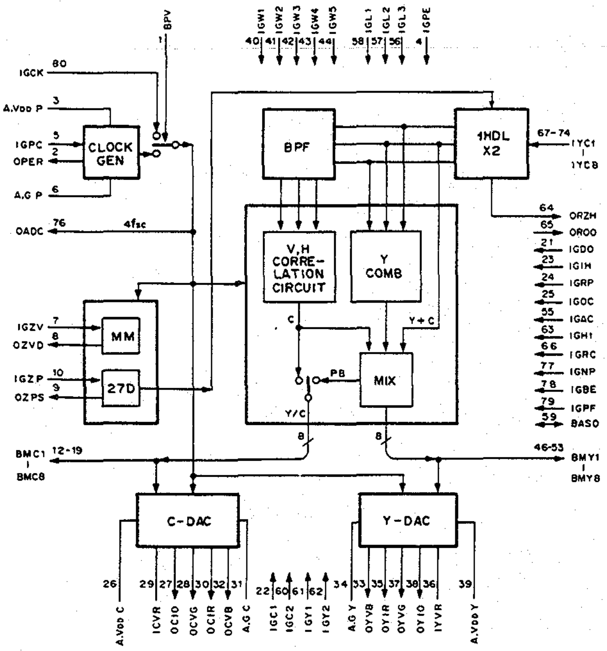

IGW1
IGW2
IGW3
IGW4
IGW5
IGL1
IGL2
IGL3
IGPE
ICY1
ICY2
ICY3
ICY4
ICY5
ICY6
ICY7
ICY8
IGC1
IGC2
ICVR
IGY1
IGY2
IYVR
IGZV
OZVD
IGZP
OZPS
IGCK
IGPC
OPER
OADC
BPV
IGD0
IGIH
IGRP
IGOC
IGAC
IGH1
IGRC
IGNP
IGBE
IGPF
OR00
BMY1
BMY2
BMY3
BMY4
BMY5
BMY6
BMY7
BMY8
OYIO
OYVB
OYVG
OYIR
BMC1
BMC2
BMC3
BMC4
BMC5
BMC6
BMC7
BMC8
OCIO
OCVB
OCVG
OCIR
ORZH
BASO

INPUT
BPV ; EXT/INT CLOCK SELECT
ICVR ; ESTABLISHES MAXIMUM AMPLITUDE VALUE FOR OCIO (PIN 27)
IGAC ; V CORRELATION CIRCUIT ON/OFF
IGBE ; SINGLE WAVE DETECTION ON/OFF (Y/C SEPARATION MODE)
IGC1 ; V CORRELATION CIRCUIT SELECT
IGC2 ; CHROMA FLAT SECTION HORIZONTAL FILTER SELECT (Y/C SEPARATION MODE)
IGCK ; EXTERNAL CLOCK
IGD0 ; DROPOUT CORRECTION
IGH1 ; FLAT SECTION HORIZONTAL FILTER SELECT (Y/C SEPARATION MODE)
IGIH ; SLEW MODE SET
IGL1 – IGL3 ; LIMITER LEVEL ADJUST FOR Y SIGNAL COMB FILTER
IGNP ; NTSC/PAL FORMAT SELECT
IGOC ; OUTPUT ENABLE
IGPC ; VCO CONTROL
IGPE ; TEST
IGPF ; PLL SUBCARRIER
IGRC ; DELAY LINE LENGTH ADJUST
IGRP ; Y/C SEPARATION AND PLAYBACK MODE SELECT
IGW1 – IGW5 ; Y COMB FILTER DEPTH ADJUST
IGY1, IGY2 ; EDGE SECTION HORIZONTAL FILTER SELECT (Y/C SEPARATION MODE)
IGZP ; 1-BIT DELAY CIRCUIT
IGZV ; VCR HEAD SWITCHING
IYC1 – IYC8 ; VIDEO SIGNAL
IYVR ; ESTABLISHES MAXIMUM AMPLITUDE VALUE FOR OYIO (PIN 38)

OUTPUT
OADC ; CLOCK
OCIO ; CHROMA ANALOG SIGNAL
OCIR ; CONNECT A RESISTOR 16x LARGE THAN THE RESISTOR AT OCIO (PIN 27)
OCVB ; CONNECT TO DIGITAL GND WHICH HAS A CAPACITANCE OF UP TO 0.1 μF
OCVG ; CONNECT TO AN ANALOG POWER SUPPLY WHICH HAS A CAPACITANCE OF UP TO 0.1 μF
OPER ; PLL ERROR
OR00 ; "0" IS DETECTED AT ALL INPUTS
ORZH ; 1-BIT DELAY CIRCUIT
OYIO ; Y ANALOG SIGNAL
OYIR ; CONNECT A RESISTOR 16x LARGE THAN THE RESISTOR AT OYIO (PIN 38)
OYVB ; CONNECT TO DIGITAL GND WHICH HAS A CAPACITANCE OF UP TO 0.1 μF
OYVG ; CONNECT TO AN ANALOG POWER SUPPLY WHICH HAS A CAPACITANCE OF UP TO 0.1 μF
OZPS ; 1-BIT DELAY CIRCUIT
OZVD ; VSYNC PERIOD MASK

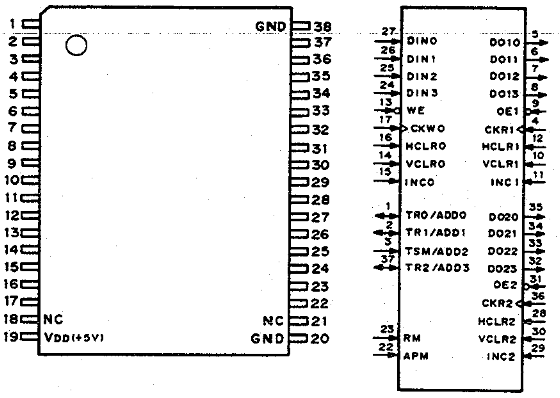
INPUT/OUTPUT
BASO ; EDGE DETECTION LEVEL SELECT (Y/C SEPARATION MODE)
BMC1 – BMC8 ; CHROMA DIGITAL SIGNAL
BMY1 – BMY8 ; Y DIGITAL SIGNAL

OTHER
A.G C ; ANALOG GND FOR CHROMA D/A
A.G P ; ANALOG GND FOR VCO
A.G Y ; ANALOG GND FOR Y D/A
A.VDD C ; ANALOG POWER SUPPLY FOR CHROMA D/A
A.VDD P ; ANALOG POWER SUPPLY FOR VCO
A.VDD Y ; ANALOG POWER SUPPLY FOR Y D/A
D.G ; DIGITAL GND
D.VDD ; POWER SUPPLY FOR DIGITAL


BPV
IGW1
IGW2
IGW3
IGW4
IGW5
IGL1
IGL2
IGL3
IGPE
IGCK
A.VDD P
IGPC
OPER
A.G P
OADC
4fsc
CLOCK GEN
BPF
1HDL X2
67–74
IYC1 | IYC8
V,H CORRE-LATION CIRCUIT
Y COMB
C
Y+C
PB
Y/C
MIX
MM
27D
IGZV
OZVD
IGZP
OZPS
ORZH
OR00
IGD0
IGIH
IGRP
IGOC
IGAC
IGH1
IGRC
IGNP
IGBE
IGPF
BASO
BMC1 | BMC8
12–19
46–53
BMY1 | BMY8
8
8
C-DAC
Y-DAC
A.VDD C
ICVR
OCIO
OCVG
OCIR
OCVB
A.G C
IGC1
IGC2
IGY1
IGY2
A.G Y
OYVB
OYIR
OYVG
OYIO
IYVR
A.VDD Y

CXK1206AM (SONY) FLAT PACKAGE
CXK1206M (SONY) FLAT PACKAGE

C-MOS VIDEO FIELD MEMORY (960-COLUMNx306-ROWx4-BIT)
- TOP VIEW -

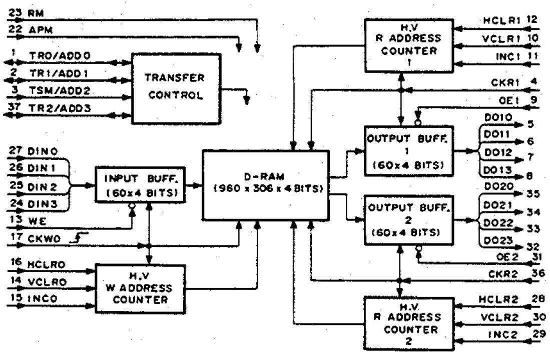

GND
NC
VDD(+5V)
NC
GND
DIN0
DIN1
DIN2
DIN3
WE
CKW0
HCLR0
VCLR0
INC0
TR0/ADD0
TR1/ADD1
TSM/ADD2
TR2/ADD3
RM
APM
DO10
DO11
DO12
DO13
OE1
CKR1
HCLR1
VCLR1
INC1
DO20
DO21
DO22
DO23
OE2
CKR2
HCLR2
VCLR2
INC2

PIN	SIGNAL	DESCRIPTION
1	TR0/ADD0	W PORT 0 TRANSFER SYNC I/O, ADDRESS 0 INPUT
2	TR1/ADD1	R PORT 1 TRANSFER SYNC I/O, ADDRESS 1 INPUT
3	TSM/ADD2	TRANSFER SYNCHRONOUS MODE, ADDRESS 2 INPUT
4	CKR1	R PORT 1 SHIFT SIGNAL INPUT
5	DO10	R PORT 1 DATA 0 OUTPUT
6	DO11	R PORT 1 DATA 1 OUTPUT
7	DO12	R PORT 1 DATA 2 OUTPUT
8	DO13	R PORT 1 DATA 3 OUTPUT
9	OE1	R PORT 1 OUTPUT ENABLE INPUT
10	VCLR1	R PORT 1 VERTICAL CLEAR INPUT
11	INC1	R PORT 1 LINE INCREMENT INPUT
12	HCLR1	R PORT 1 HORIZONTAL CLEAR INPUT
13	WE	W PORT 0 WRITE ENABLE INPUT
14	VCLR0	W PORT 0 VERTICAL CLEAR INPUT
15	INC0	W PORT 0 LINE INCREMENT INPUT
16	HCLR0	W PORT 0 HORIZONTAL CLEAR INPUT
17	CKW0	W PORT 0 SHIFT SIGNAL INPUT
18	NC	(no connection)
19	VDD	+5V INPUT
20	GND	GND
21	NC	(no connection)
22	APM	ADDRESS PRESET MODE INPUT
23	RM	RECURSIVE MODE ENABLE INPUT
24	DIN3	W PORT 0 DATA 3 INPUT
25	DIN2	W PORT 0 DATA 2 INPUT
26	DIN1	W PORT 0 DATA 1 INPUT
27	DIN0	W PORT 0 DATA 0 INPUT
28	HCLR2	R PORT 2 HORIZONTAL CLEAR INPUT
29	INC2	R PORT 2 LINE INCREMENT INPUT
30	VCLR2	R PORT 2 VERTICAL CLEAR INPUT
31	OE2	R PORT 2 OUTPUT ENABLE INPUT
32	DO23	R PORT 2 DATA 3 OUTPUT
33	DO22	R PORT 2 DATA 2 OUTPUT
34	DO21	R PORT 2 DATA 1 OUTPUT
35	DO20	R PORT 2 DATA 0 OUTPUT
36	CKR2	R PORT 2 SHIFT SIGNAL INPUT
37	TR2/ADD3	R PORT 2 TRANSFER SYNC I/O, ADDRESS 3 INPUT
38	GND	GND

MODE SELECTION

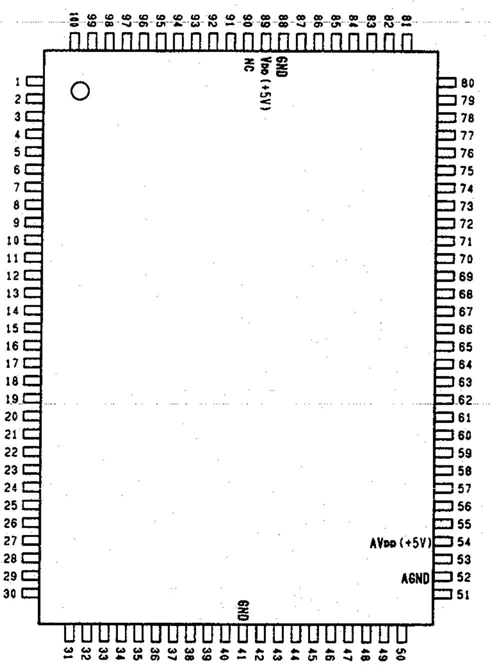
CONTROL INPUTS		TS,TR/ADD			MODE
RM	APM	TSM	TR 0-2	ADD 0-3	
0	0	0	OUT-PUT	-	NON RECURSIVE MODE, TRANSFER SYNCHRONOUS MODE OUTPUT
0	0	1	IN-PUT	-	NON RECURSIVE MODE, TRANSFER SYNCHRONOUS MODE INPUT
0	1	-	-	IN-PUT	NON RECURSIVE MODE, ADDRESS PRESET MODE
1	0	0	OUT-PUT	-	RECURSIVE MODE, TRANSFER SYNCHRONOUS MODE OUTPUT
1	0	1	IN-PUT	-	RECURSIVE MODE, TRANSFER SYNCHRONOUS MODE INPUT

0:LOW LEVEL 1:HIGH LEVEL


23 RM
22 APM
1 TR0/ADD0
2 TR1/ADD1
3 TSM/ADD2
37 TR2/ADD3
TRANSFER CONTROL
27 DIN0
26 DIN1
25 DIN2
24 DIN3
13 WE
17 CKW0
INPUT BUFF. (60x4 BITS)
D-RAM (960 x 306 x 4 BITS)
16 HCLR0
14 VCLR0
15 INC0
H.V W ADDRESS COUNTER
H.V R ADDRESS COUNTER 1
HCLR1 12
VCLR1 10
INC1 11
CKR1 4
OE1 9
OUTPUT BUFF. 1 (60x4 BITS)
DO10 5
DO11 6
DO12 7
DO13 8
OUTPUT BUFF. 2 (60x4 BITS)
DO20 35
DO21 34
DO22 33
DO23 32
OE2 31
CKR2 36
H.V R ADDRESS COUNTER 2
HCLR2 28
VCLR2 30
INC2 29

CXP80624 (SONY)
CXP80P624 (SONY)

C-MOS 8-BIT 1-CHIP MICROCOMPUTER
- TOP VIEW -

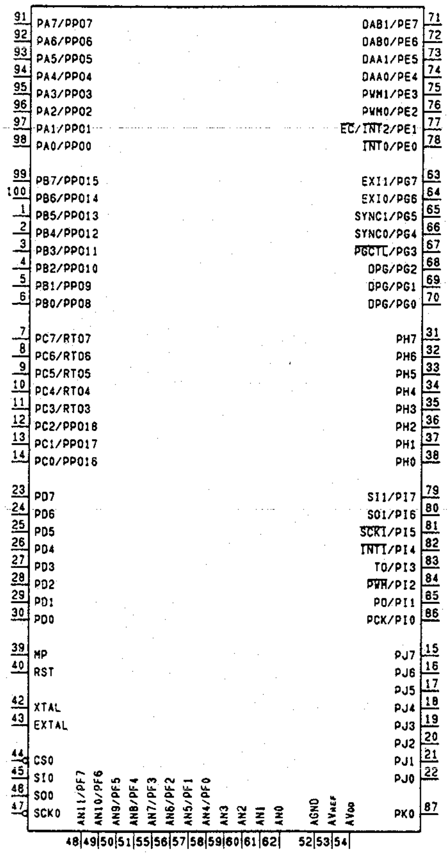

GND
VDD (+5V)
NC
AVDD (+5V)
AGND
GND

INPUT
AN0 – AN11 : A-D CONVERTOR'S ANALOG INPUTS
AVREF : A-D CONVERTOR'S REFERENCE VOLTAGE INPUT
CFG : CAPSTAN FG INPUT
CS0 : SERIAL INTERFACE CHANNLE 0 SELECT INPUT
DPG,DFG : DURM PG AND FG INPUTS
EC : EVENT CONTROL INPUT FOR TIMER/COUNTER
EXI0,EXI1 : FRC CAPTURE UNIT'S EXTERNAL INPUTS
EXTAL : CRYSTAL CONNECTION OR EXTERNAL CLOCK INPUT FOR SYSTEM CLOCK GENERATOR
INT0 – INT2 : INTERRUPT REQUEST INPUTS (FALLING EDGE ACTIVE)
PBCTL : PLAYBACK CTL PULSE INPUT
PCK : PRESCALER'S EXTERNAL CLOCK INPUT
PE0,PE1 : INPUTS OF PORT E (PE2 – PE7 : OUTPUTS)
PF0 – PF3 : INPUTS OF PORT F (PF4 – PF7 : OUTPUTS)
PG0 – PG7 : INPUTS OF PORT G
PI0 : INPUT OF PORT I (PI1 – PI7 : INPUTS/OUTPUTS)
PK0 : INPUT OF PORT K
SI0,SI1 : SERIAL DATA INPUTS (CHANNLE 0 AND CHANNLE 1)
SYNC0,SYNC1 : COMPOSITE SYNC SIGNAL INPUTS

OUTPUT
DAA0,DAB0 : DA GATE PULSE OUTPUTS (12 BITS PWM CHANNLE 0)
DAA1,DAB1 : DA GATE PULSE OUTPUTS (12 BITS PWM CHANNLE 1)
MP : MICROPROCESSOR MODE INPUT
PA0 – PA7 : OUTPUTS OF PORT A
PB0 – PB7 : OUTPUTS OF PORT B
PE2 – PE7 : OUTPUTS OF PORT E (PE0, PE1 : INPUTS)
PF4 – PF7 : OUTPUTS OF PORT F (PF0 – PF3 : INPUTS)
PH0 – PH7 : OUTPUTS OF PORT H (N-CH OPEN DRAIN OUTPUTS)
PPO0 – PPO18 : PROGRAMMABLE PATTERN GENERATOR OUTPUS
PO : PRESCALER OUTPUT
PWM : PULSE WIDTH MODULATION OUTPUT
PWM0,PWM1 : 12 BITS PULSE WIDTH MODULATION OUTPUTS (CHANNLE 0 AND CHANNLE 1)
RTO3 – RTO7 : REALTIME PULSE GENERATOR OUTPUTS
SO0,SO1 : SERIAL DATA OUTPUTS (CHANNLE 0 AND CHANNLE 1)
TO : TIMER/COUNTER OUTPUT (DUTY 50%)
XTAL : CRYSTAL CONNECTION

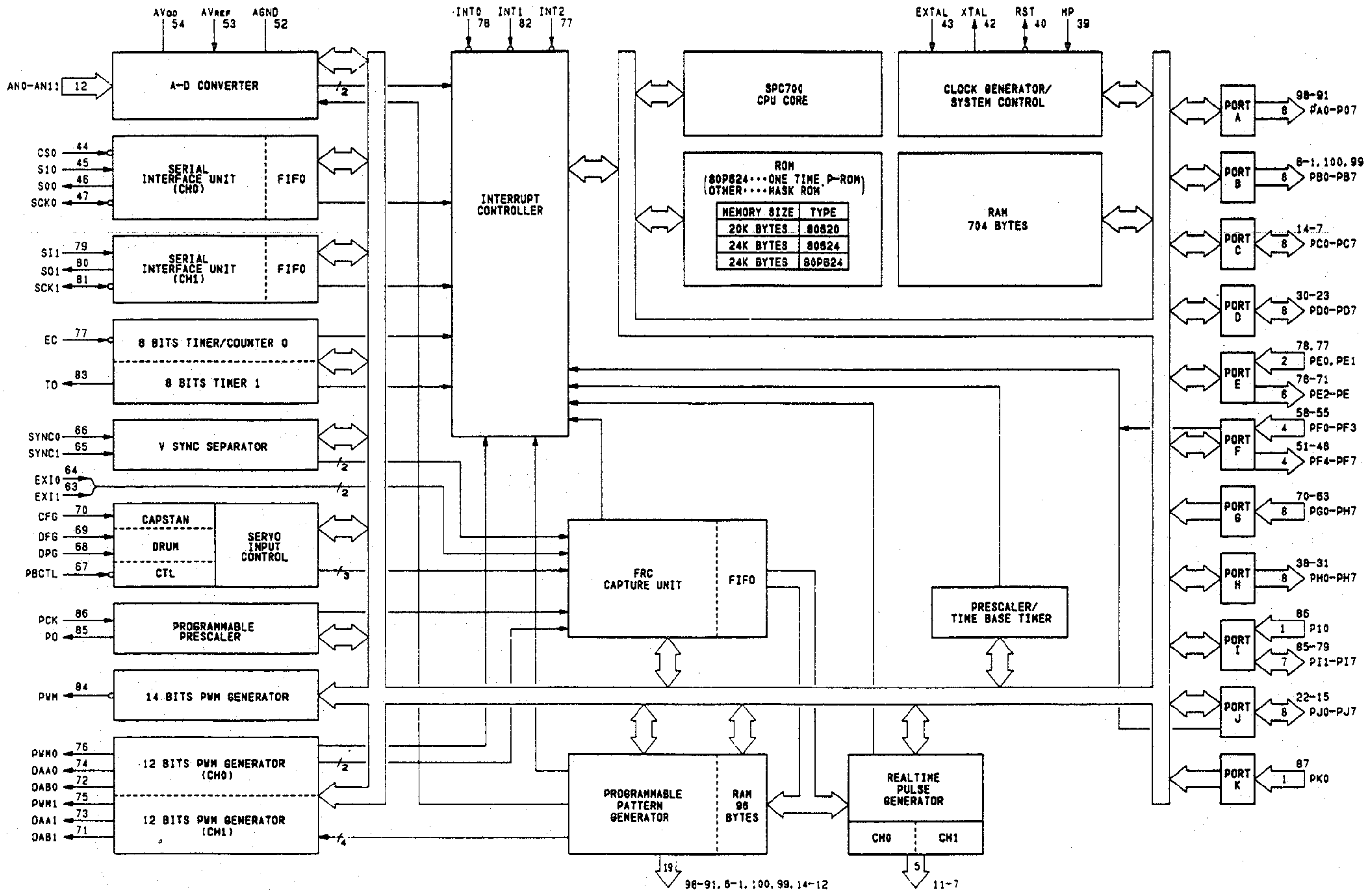
INPUT/OUTPUT
PC0 – PC7 : INPUTS/OUTPUTS OF PROT C (BIT PROGRAMMABLE)
PD0 – PD7 : INPUTS/OUTPUTS OF PROT D (4 BITS PROGRAMMABLE)
PI1 – PI7 : INPUTS/OUTPUTS OF PROT I (BIT PROGRAMMABLE, PI0 : INPUT)
PJ0 – PJ7 : INPUTS/OUTPUTS OF PROT J (BIT PROGRAMMABLE)
RST : SYSTEM RESET INPUT AND POWER ON RESET OUTPUT
SCK0,SCK1 : SERIAL CLOCK INPUTS/OUTPUTS (CHANNLE 0 AND CHANNLE 1)

OTHER
AGND : A-D CONVERTOR'S GROUND
AVDD (+5V) : A-D CONVERTOR'S VDD

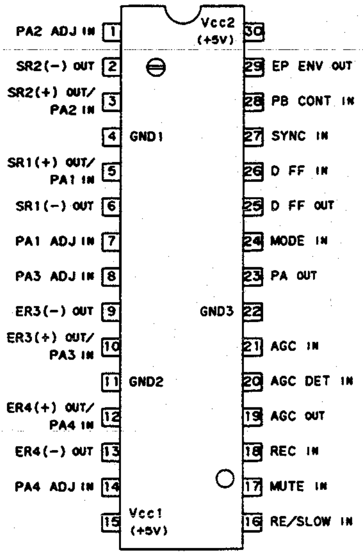

91 PA7/PP07
92 PA6/PP06
93 PA5/PP05
94 PA4/PP04
95 PA3/PP03
96 PA2/PP02
97 PA1/PP01
98 PA0/PP00
99 PB7/PP015
100 PB6/PP014
1 PB5/PP013
2 PB4/PP012
3 PB3/PP011
4 PB2/PP010
5 PB1/PP09
6 PB0/PP08
7 PC7/RT07
8 PC6/RT06
9 PC5/RT05
10 PC4/RT04
11 PC3/RT03
12 PC2/PP018
13 PC1/PP017
14 PC0/PP016
23 PD7
24 PD6
25 PD5
26 PD4
27 PD3
28 PD2
29 PD1
30 PD0
39 MP
40 RST
42 XTAL
43 EXTAL
44 CS0
45 SI0
46 SO0
47 SCK0
DAB1/PE7 71
DAB0/PE6 72
DAA1/PE5 73
DAA0/PE4 74
PWM1/PE3 75
PWM0/PE2 76
EC/INT2/PE1 77
INT0/PE0 78
EXI1/PG7 63
EXI0/PG6 64
SYNC1/PG5 65
SYNC0/PG4 66
PBCTL/PG3 67
DPG/PG2 68
DPG/PG1 69
DPG/PG0 70
PH7 31
PH6 32
PH5 33
PH4 34
PH3 35
PH2 36
PH1 37
PH0 38
SI1/PI7 79
SO1/PI6 80
SCK1/PI5 81
INT1/PI4 82
TO/PI3 83
PWM/PI2 84
PO/PI1 85
PCK/PI0 86
PJ7 15
PJ6 16
PJ5 17
PJ4 18
PJ3 19
PJ2 20
PJ1 21
PJ0 22
PK0 87
AN11/PF7 48
AN10/PF6 49
AN9/PF5 50
AN8/PF4 51
AN7/PF3 55
AN6/PF2 56
AN5/PF1 57
AN4/PF0 58
AN3 59
AN2 60
AN1 61
AN0 62
AGND 52
AVREF 53
AVDD 54

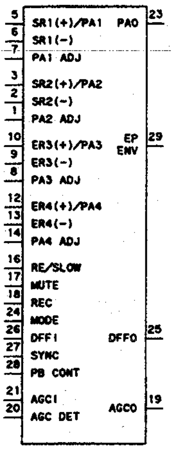
(VDD = AVDD = + 5V)

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	O	PB5/PPO13	26	I/O	PD4	51	I/O	PF4/AN8	76	O	PE2/PWM0
2	O	PB4/PPO12	27	I/O	PD3	52	–	AGND	77	I	PE1/EC/INT2
3	O	PB3/PPO11	28	I/O	PD2	53	I	AVREF	78	I	PE0/INT0
4	O	PB2/PPO10	29	I/O	PD1	54	–	AVDD	79	I/O	PI7/SI1
5	O	PB1/PPO9	30	I/O	PD0	55	I	PF3/AN7	80	I/O	PI6/SO1
6	O	PB0/PPO8	31	I/O	PH7	56	I	PF2/AN6	81	I/O	PI5/SCK1
7	I/O	PC7/RTO7	32	O	PH6	57	I	PF1/AN5	82	I/O	PI4/INT1
8	I/O	PC6/RTO6	33	O	PH5	58	I	PF0/AN4	83	I/O	PI3/TO
9	I/O	PC5/RTO5	34	O	PH4	59	I	AN3	84	I/O	PI2/PWM
10	I/O	PC4/RTO4	35	O	PH3	60	I	AN2	85	I/O	PI1/PO
11	I/O	PC3/RTO3	36	O	PH2	61	I	AN1	86	I	PI0/PCK
12	I/O	PC2/PPO18	37	O	PH1	62	I	AN0	87	I	PK0
13	I/O	PC1/PPO17	38	O	PH0	63	I	PG7/EXI1	88	–	GND
14	I/O	PC0/PPO16	39	O	MP	64	I	PG6/EXI0	89	–	VDD
15	I/O	PJ7	40	I/O	RST	65	I	PG5/SYNC1	90	–	NC
16	I/O	PJ6	41	–	GND	66	I	PG4/SYNC0	91	O	PA7/PPO7
17	I/O	PJ5	42	O	XTAL	67	I	PG3/PBCTL	92	O	PA6/PPO6
18	I/O	PJ4	43	I	EXTAL	68	I	PG2/DPG	93	O	PA5/PPO5
19	I/O	PJ3	44	I	CS0	69	I	PG1/DFG	94	O	PA4/PPO4
20	I/O	PJ2	45	I	SI0	70	I	PG0/CFG	95	O	PA3/PPO3
21	I/O	PJ1	46	O	SO0	71	O	PE7/DAB1	96	O	PA2/PPO2
22	I/O	PJ0	47	I/O	SCK0	72	O	PE6/DAB0	97	O	PA1/PPO1
23	I/O	PD7	48	I/O	PF7/AN11	73	O	PE5/DAA1	98	O	PA0/PPO0
24	I/O	PD6	49	I/O	PF6/AN10	74	O	PE4/DAA0	99	O	PB7/PPO15
25	I/O	PD5	50	I/O	PF5/AN9	75	O	PE3/PWM1	100	O	PB6/PPO14


AVDD 54
AVREF 53
AGND 52
AN0-AN11 12
A-D CONVERTER
CS0 44
SI0 45
SO0 46
SCK0 47
SERIAL INTERFACE UNIT (CH0)
FIFO
SI1 79
SO1 80
SCK1 81
SERIAL INTERFACE UNIT (CH1)
FIFO
EC 77
8 BITS TIMER/COUNTER 0
TO 83
8 BITS TIMER 1
SYNC0 66
SYNC1 65
V SYNC SEPARATOR
EXI0 64
EXI1 63
CFG 70
DFG 69
DPG 68
PBCTL 67
CAPSTAN
DRUM
CTL
SERVO INPUT CONTROL
PCK 86
PO 85
PROGRAMMABLE PRESCALER
PWM 84
14 BITS PWM GENERATOR
PWM0 76
DAA0 74
DAB0 72
PWM1 75
DAA1 73
DAB1 71
12 BITS PWM GENERATOR (CH0)
12 BITS PWM GENERATOR (CH1)
INT0 78
INT1 82
INT2 77
INTERRUPT CONTROLLER
FRC CAPTURE UNIT
FIFO
PROGRAMMABLE PATTERN GENERATOR
RAM 96 BYTES
19
98-91, 6-1, 100, 99, 14-12
PP00-PP018
EXTAL 43
XTAL 42
RST 40
MP 39
SPC700 CPU CORE
CLOCK GENERATOR/ SYSTEM CONTROL
ROM
(80P824···ONE TIME P-ROM)
(OTHER····MASK ROM)
MEMORY SIZE | TYPE
20K BYTES | 80820
24K BYTES | 80824
24K BYTES | 80P824
RAM 704 BYTES
PRESCALER/ TIME BASE TIMER
REALTIME PULSE GENERATOR
CH0
CH1
5
11-7
RT03-RT07
PORT A 8 98-91 PA0-P07
PORT B 8 6-1, 100, 99 PB0-PB7
PORT C 8 14-7 PC0-PC7
PORT D 8 30-23 PD0-PD7
PORT E 2 78, 77 PE0, PE1
6 76-71 PE2-PE
PORT F 4 58-55 PF0-PF3
4 51-48 PF4-PF7
PORT G 8 70-63 PG0-PH7
PORT H 8 38-31 PH0-PH7
PORT I 1 86 PI0
7 85-79 PI1-PI7
PORT J 8 22-15 PJ0-PJ7
PORT K 1 87 PK0
2
2
2
3
2
4

HA118019NT (HITACHI)
VTR PRE REC AMP
– TOP VIEW –


1 PA2 ADJ IN
2 SR2(–) OUT
3 SR2(+) OUT/PA2 IN
4 GND1
5 SR1(+) OUT/PA1 IN
6 SR1(–) OUT
7 PA1 ADJ IN
8 PA3 ADJ IN
9 ER3(–) OUT
10 ER3(+) OUT/PA3 IN
11 GND2
12 ER4(+) OUT/PA4 IN
13 ER4(–) OUT
14 PA4 ADJ IN
15 Vcc1 (+5V)
16 RE/SLOW IN
17 MUTE IN
18 REC IN
19 AGC OUT
20 AGC DET IN
21 AGC IN
22 GND3
23 PA OUT
24 MODE IN
25 D FF OUT
26 D FF IN
27 SYNC IN
28 PB CONT IN
29 EP ENV OUT
30 Vcc2 (+5V)


5 SR1(+)/PA1
6 SR1(–)
7 PA1 ADJ
3 SR2(+)/PA2
2 SR2(–)
1 PA2 ADJ
10 ER3(+)/PA3
9 ER3(–)
8 PA3 ADJ
12 ER4(+)/PA4
13 ER4(–)
14 PA4 ADJ
16 RE/SLOW
17 MUTE
18 REC
24 MODE
26 DFFI
27 SYNC
28 PB CONT
21 AGCI
20 AGC DET
PAO 23
EP ENV 29
DFFO 25
AGCO 19

INPUT

AGCI	;AGC
AGC DET	;AGC DETECT
DFFI	;DRUM FF
MODE	;MODE CONTROL (L;SP/H;EP)
MUTE	;REC MUTE CONTROL
PA1–PA4	;PRE AMP CH1–CH4
PA1–PA4 ADJ	;PRE AMP CH1–CH4 ADJUST
PB CONT	;PB CONTROL (MANUAL/AUTO/STILL)
REC	;REC
RE/SLOW	;REC EQ/SLOW CONTROL
SYNC	;SYNC SEPARATE

OUTPUT

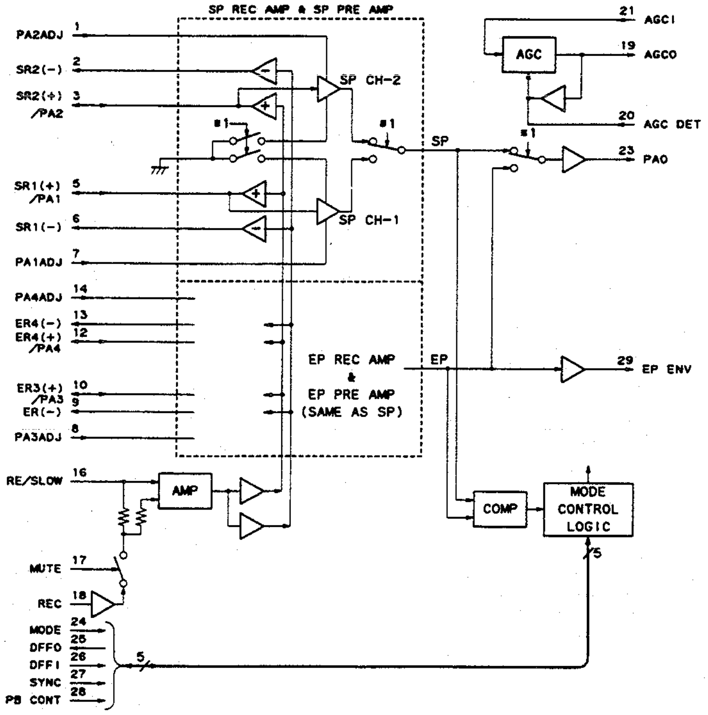
AGCO	;AGC OUTPUT (PB/REC SELECT)
DFFO	;DRUM FF
EP ENV	;EP ENVELOPE
ER3(+).ER4(+)	;EP REC CH3/CH4(+)
ER3(–).ER4(–)	;EP REC CH3/CH4(–)
PAO	;PRE AMP
SR1(+).SR2(+)	;SP REC CH1/CH2(+)
SR1(–).SR2(–)	;SP REC CH1/CH2(–)

MODE CONTROL

SYMBOL / MODE	DFF1	MODE	PB CONT	RE/ SLOW	DFFO	PAO
SP PB	0	0	1	OPEN	0	CH1
	1	0	1	OPEN	1	CH2
EP PB	0	1	1	OPEN	1	CH4
	1	1	1	OPEN	0	CH3
AUTO	0	–	MIDDLE	OPEN		
	1	–	MIDDLE	OPEN		
SP STILL	0	0	0	OPEN	1	CH4
	1	0	0	OPEN	1	CH2
EP STILL	0	1	0	OPEN	0	CH1
	1	1	0	OPEN	0	CH3
SP SLOW	0	0	0	0	0	CH1
	1	0	0	0	1	CH2
EP SLOW	0	1	0	0	1	CH4
	1	1	0	0	0	CH3

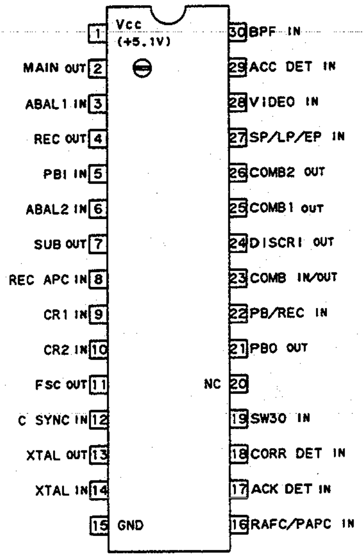
0	CH1
1	CH4
1	CH2
0	CH3

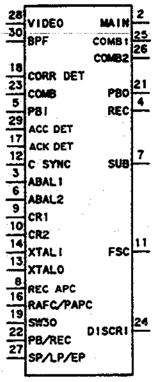
1;HIGH LEVEL
0;LOW LEVEL


SP REC AMP & SP PRE AMP
PA2ADJ 1
SR2(–) 2
SR2(+)/PA2 3
SR1(+)/PA1 5
SR1(–) 6
PA1ADJ 7
PA4ADJ 14
ER4(–) 13
ER4(+)/PA4 12
ER3(+)/PA3 10
ER(–) 9
PA3ADJ 8
SP CH-2
SP CH-1
*1
SP
EP
EP REC AMP & EP PRE AMP (SAME AS SP)
AGC
21 AGCI
19 AGCO
20 AGC DET
23 PAO
29 EP ENV
RE/SLOW 16
AMP
COMP
MODE CONTROL LOGIC
5
MUTE 17
REC 18
MODE 24
DFFO 25
DFFI 26
SYNC 27
PB CONT 28

HA118027NT (HITACHI)

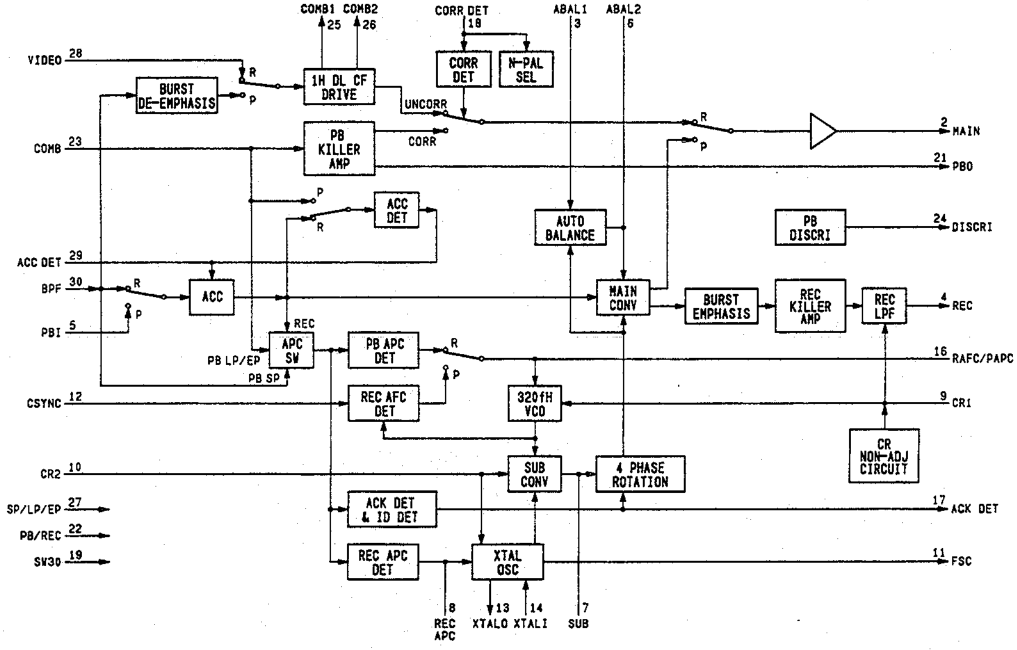
CHROMA SIGNAL PROCESSOR FOR VHS
– TOP VIEW –


Vcc (+5.1V)
1
MAIN OUT 2
ABAL1 IN 3
REC OUT 4
PBI IN 5
ABAL2 IN 6
SUB OUT 7
REC APC IN 8
CR1 IN 9
CR2 IN 10
FSC OUT 11
C SYNC IN 12
XTAL OUT 13
XTAL IN 14
15 GND
30 BPF IN
29 ACC DET IN
28 VIDEO IN
27 SP/LP/EP IN
26 COMB2 OUT
25 COMB1 OUT
24 DISCRI OUT
23 COMB IN/OUT
22 PB/REC IN
21 PBO OUT
NC 20
19 SW30 IN
18 CORR DET IN
17 ACK DET IN
16 RAFC/PAPC IN


28 VIDEO
30 BPF
18 CORR DET
23 COMB
5 PBI
29 ACC DET
17 ACK DET
12 C SYNC
3 ABAL1
6 ABAL2
9 CR1
10 CR2
14 XTALI
13 XTALO
8 REC APC
16 RAFC/PAPC
19 SW30
22 PB/REC
27 SP/LP/EP
MAIN 2
COMB1 25
COMB2 26
PBO 21
REC 4
SUB 7
FSC 11
DISCRI 24

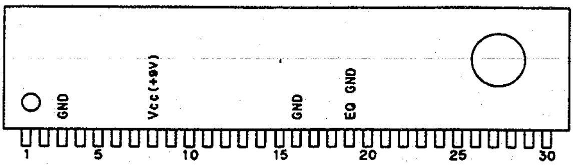
INPUT
ABAL1 ; DE-COUPLING CAPACITOR PIN FOR AUTO BALANCE
ABAL2 ; AUTO BALANCE DETECT
ACC DET ; ACC DETECT
ACK DET ; ACK DETECT
BPF ; REC ACC/PB BURST DE-EMPHASIS
CR1 ; CAPACITOR AND RESISTOR NOT-ADJUST DETECT
CR2 ; CRYSTAL OSC
(VARIABLE CAPACITANCE DIORE FOR 4 PHASE GENERATOR BLOCK)
COMB ; PB COLOR KILLER AMP
CORR DET ; UNCORRELATED SIGNAL/MANUAL UNCORRELATED MODE SELECT
/N • PAL MODE SELECT
CSYNC ; COMPOSITE SYNC
PBI ; PB ACC
PB/REC ; H ; PB/L ; REC SELECT
RAFC/PAPC ; REC AFC/PB APC DETECT
REC APC ; REC APC DETECT
SP/LP/EP ; SP/LP/EP SELECT CONTROL (SP : 0 - 0.8 V/LP : 1.2 - 3.3 V/EP : 3.8 - 5.1 V)
SUB ; 4.21MHz TANK CIRCUIT
SW30 ; SWITCHING PULSE (L ; CH-2/H ; CH-1)
VIDEO ; REC VIDEO
XTAL ; CRYSTAL OSC

OUTPUT
COMB ; REC COLOR COMB
COMB1 ; COMB DRIVE
COMB2 ; PB BURST DE-EMPHASIS
DISCRI ; PB DISCRIMINATE
FSC ; FSC
MAIN ; REC COLOR COMB/PB MAIN CONVERTER
PBO ; PB COLOR KILLER AMP/REC COMB
REC ; REC LPF COLOR SIGNAL OUT/PB ID STOP CONTROL
XTAL ; CRYSTAL OSC

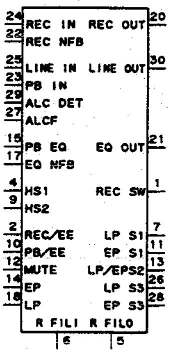

COMB1 COMB2
25 26
CORR DET 18
ABAL1 3
ABAL2 6
VIDEO 28
R
P
BURST DE-EMPHASIS
1H DL CF DRIVE
CORR DET
N-PAL SEL
UNCORR
R
P
2 MAIN
COMB 23
PB KILLER AMP
CORR
21 PBO
P
ACC DET
R
AUTO BALANCE
PB DISCRI
24 DISCRI
ACC DET 29
BPF 30
PBI 5
R
P
ACC
REC
MAIN CONV
BURST EMPHASIS
REC KILLER AMP
REC LPF
4 REC
APC SW
PB LP/EP
PB SP
PB APC DET
R
P
16 RAFC/PAPC
CSYNC 12
REC AFC DET
320fH VCO
9 CR1
CR NON-ADJ CIRCUIT
CR2 10
SUB CONV
4 PHASE ROTATION
SP/LP/EP 27
PB/REC 22
SW30 19
ACK DET & ID DET
17 ACK DET
REC APC DET
XTAL OSC
11 FSC
8 REC APC
13 XTALO
14 XTALI
7 SUB

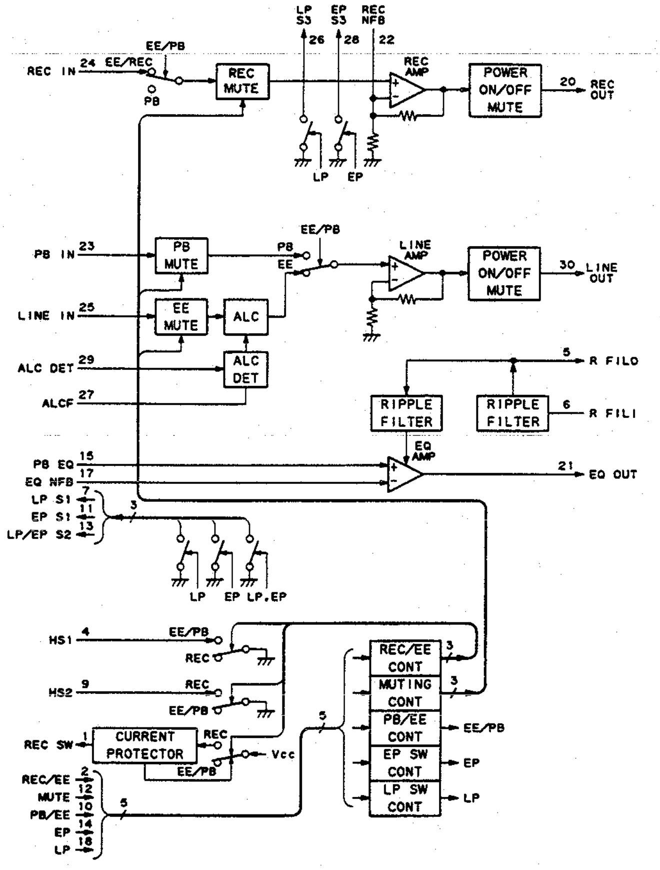
LA7297 (SANYO)

AUDIO SIGNAL REC/PB PROCESSOR
- SIDE VIEW -


GND
Vcc(+9V)
GND
EQ GND
1
5
10
15
20
25
30

PIN NO	I/O	SYMBOL	PIN NO	I/O	SYMBOL
1	O	REC SW	16	—	GND
2	I	REC/EE	17	I	EQ NFB
3	—	GND	18	I	LP
4	I	HS1	19	—	EQ GND
5	O	R FILO	20	O	REC OUT
6	I	R FILI	21	O	EQ OUT
7	O	LP S1	22	I	REC NFB
8	—	Vcc	23	I	PB IN
9	I	HS2	24	I	REC IN
10	I	PB/EE	25	I	LINE IN
11	O	EP S1	26	O	LP S3
12	I	MUTE	27	—	ALCF
13	O	LP/EP S2	28	O	EP S3
14	I	EP	29	I	ALC DET
15	I	PB EQ	30	O	LINE OUT


24 REC IN
22 REC NFB
25 LINE IN
23 PB IN
29 ALC DET
27 ALCF
15 PB EQ
17 EQ NFB
4 HS1
9 HS2
2 REC/EE
10 PB/EE
12 MUTE
14 EP
18 LP
REC OUT 20
LINE OUT 30
EQ OUT 21
REC SW 1
LP S1 7
EP S1 11
LP/EPS2 13
LP S3 26
EP S3 28
R FILI 6
R FILO 5

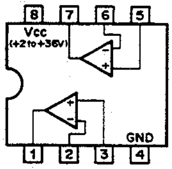

LP S3 26
EP S3 28
REC NFB 22
REC IN 24
EE/PB
EE/REC
PB
REC MUTE
REC AMP
POWER ON/OFF MUTE
20 REC OUT
LP
EP
PB IN 23
PB MUTE
PB
EE
EE/PB
LINE AMP
POWER ON/OFF MUTE
30 LINE OUT
LINE IN 25
EE MUTE
ALC
ALC DET 29
ALC DET
ALCF 27
5 R FILO
RIPPLE FILTER
RIPPLE FILTER
6 R FILI
EQ AMP
PB EQ 15
EQ NFB 17
21 EQ OUT
LP S1 7
EP S1 11
LP/EP S2 13
3
LP
EP
LP.EP
HS1 4
EE/PB
REC
HS2 9
REC
EE/PB
REC SW 1
CURRENT PROTECTOR
REC
EE/PB
Vcc
REC/EE 2
MUTE 12
PB/EE 10
EP 14
LP 18
5
REC/EE CONT
MUTING CONT
PB/EE CONT
EP SW CONT
LP SW CONT
3
3
EE/PB
EP
LP

INPUT
ALC DET ;AUTO LIMITER CONTROL DETECTOR
ALCF ;AUTO LIMITER CONTROL FILTER
EP ;EP SWITCH CONTROL
EQ NFB ;PB EQUALIZED NEGATIVE FEEDBACK
HS1,2 ;HEAD SWITCH 1,2
LP ;LP SWITCH CONTROL
LINE IN ;AUDIO LINE
MUTE ;MUTE SWITCH CONTROL
PB/EE ;PB/EE SWITCH CONTROL
PB EQ ;PB EQUALIZED
PB IN ;AUDIO PB LEVEL
REC/EE ;REC/EE SWITCH CONTROL
REC IN ;AUDIO REC LEVEL
REC NFB ;AUDIO REC NEGATIVE FEEDBACK
R FILI ;RIPPLE FILTER

OUTPUT
EP S1-3 ;EP SWITCH
EQ OUT ;PB EQUALIZED
LINE OUT;AUDIO LINE
LP S1-3 ;LP SWITCH
REC OUT ;AUDIO REC LEVEL
REC SW ;REC HEAD VOLTAGE CONTROL SWITCH
R FILO ;RIPPLE FILTER

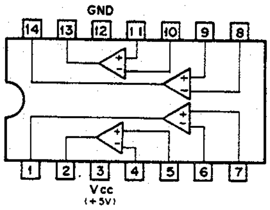
LM2903DQ (RAYTHEON)
LM2903M (RAYTHEON) FLAT PACKAGE
NJM2903D (JRC)
NJM2903M (JRC) FLAT PACKAGE

DUAL VOLTAGE COMPARATORS
- TOP VIEW -


8
7
6
5
Vcc (+2to+36V)
GND
1
2
3
4

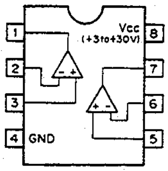
LM339N (TI)

QUAD COMPARATORS
- TOP VIEW -


GND
14
13
12
11
10
9
8
1
2
3
4
5
6
7
Vcc (+5V)

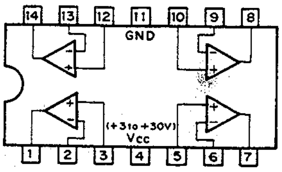
LM358P (TI)
UPC358C (NEC)

DUAL OPERATIONAL AMPLIFIERS
- TOP VIEW -


1
2
3
4 GND
Vcc (+3to+30V) 8
7
6
5

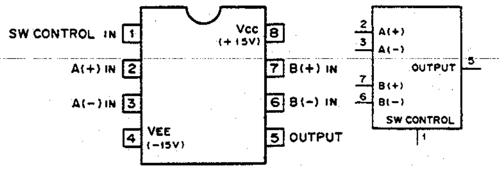
LM324N (TI)

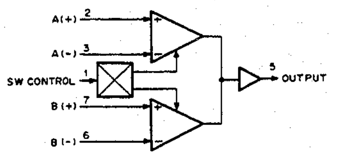
QUAD OPERATIOAL AMPLIFIERS
- TOP VIEW -


14
13
12
11
10
9
8
GND
(+3to+30V) Vcc
1
2
3
4
5
6
7

M5201P (MITSUBISHI)

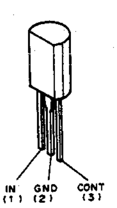
DUAL OPERATIONAL AMPLIFIERS WITH SWITCHED OUTPUT
- TOP VIEW -

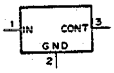

SW CONTROL IN 1
A(+) IN 2
A(−) IN 3
4 VEE (−15V)
Vcc (+15V) 8
7 B(+) IN
6 B(−) IN
5 OUTPUT
2 A(+)
3 A(−)
7 B(+)
6 B(−)
OUTPUT 5
SW CONTROL
1


A(+) 2
A(−) 3
SW CONTROL 1
B(+) 7
B(−) 6
5 OUTPUT

M5237L (MITSUBISHI)

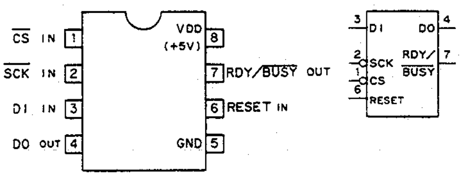
ADJUSTABLE VOLTAGE REGULATOR

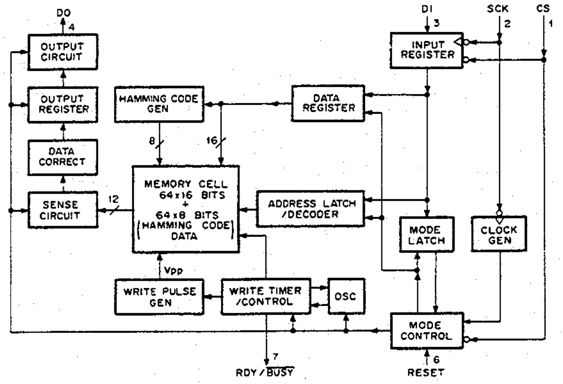

IN (1)
GND (2)
CONT (3)


1 IN
CONT 3
GND
2

M6M80011AP (MITSUBISHI)

C-MOS 1k (64x16) BITS ELECTRICALLY ERASABLE PROM
- TOP VIEW -

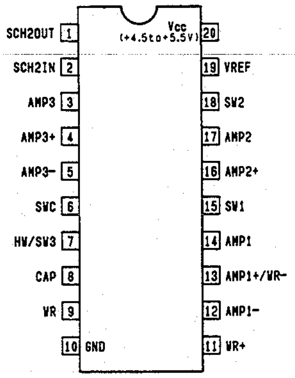

CS IN 1
SCK IN 2
DI IN 3
DO OUT 4
VDD (+5V) 8
7 RDY/BUSY OUT
6 RESET IN
GND 5
3 DI
DO 4
2 SCK
1 CS
6 RESET
RDY/BUSY 7


DO
4
OUTPUT CIRCUIT
OUTPUT REGISTER
DATA CORRECT
SENSE CIRCUIT
12
HAMMING CODE GEN
8
16
MEMORY CELL 64x16 BITS + 64x8 BITS (HAMMING CODE) DATA
Vpp
WRITE PULSE GEN
WRITE TIMER /CONTROL
OSC
DATA REGISTER
ADDRESS LATCH /DECODER
DI
3
INPUT REGISTER
SCK
2
CS
1
MODE LATCH
CLOCK GEN
MODE CONTROL
7
RDY/BUSY
6
RESET

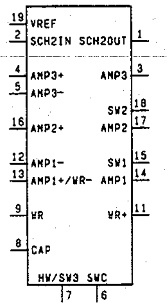
CS : CHIP SELECT INPUT
DI : DATA INPUT
DO : DATA OUTPUT
RDY/BUSY : BUSY OUTPUT
RESET : RESET INPUT
SCK : CLOCK INPUT

M52435P (MITSUBISHI)

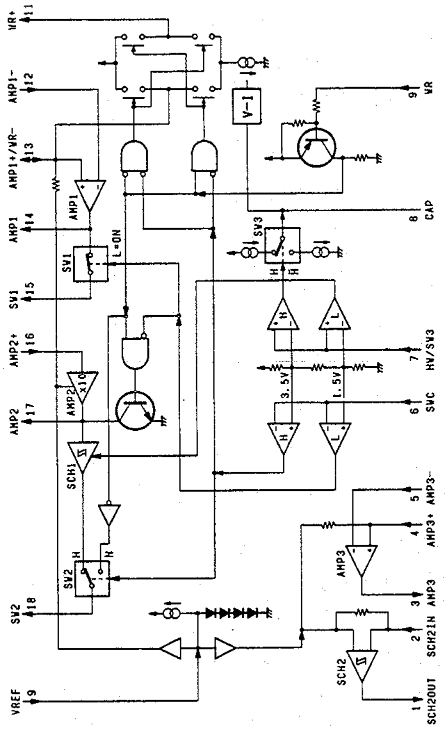
VTR DIGITAL SERVO INTERFACE
- TOP VIEW -


SCH2OUT 1
SCH2IN 2
AMP3 3
AMP3+ 4
AMP3− 5
SWC 6
HW/SW3 7
CAP 8
WR 9
10 GND
Vcc (+4.5to+5.5V) 20
19 VREF
18 SW2
17 AMP2
16 AMP2+
15 SW1
14 AMP1
13 AMP1+/WR−
12 AMP1−
11 WR+

M52435P(1/2)


19 VREF
2 SCH2IN
SCH2OUT 1
4 AMP3+
5 AMP3−
AMP3 3
SW2 18
16 AMP2+
AMP2 17
12 AMP1−
SW1 15
13 AMP1+/WR−
AMP1 14
9 WR
WR+ 11
8 CAP
HW/SW3 SWC
7
6

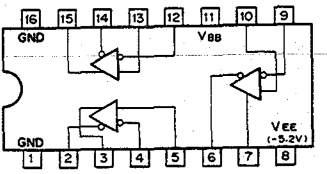
AMP1	; AMP.1 OUTPUT
AMP1+/WR−	; AMP.1 NON-INVERTING INPUT/NEGATIVE WRITE OUTPUT
AMP1−	; AMP.1 INVERTING INPUT
AMP2	; AMP.2 OUTPUT (x10)
AMP2+	; AMP.2 INPUT
AMP3	; AMP.3 OUTPUT
AMP3+	; AMP.3 NON-INVERTING INPUT
AMP3−	; AMP.3 INVERTING INPUT
CAP	; CAPASITOR CONNECTING TERMINAL FOR V-I CONVERTER
HW/SW3	; HYSTERESIS WIDTH SELECT INPUT FOR SCHMITT 1 / TRIGGER INPUT FOR SWITCH 3(TRAPEZOID WAVE GENERATE)
SCH2IN	; SCHMITT 2 INPUT
SCH2OUT	; SCHMITT 2 OUTPUT
SW1	; SWITCH 1 OUTPUT
SW2	; SWITCH 2 OUTPUT
SWC	; SWCTHES 1 AND 2 CONTROL INPUT (REC/PLAYBAK SWICTHOVER)
VREF	; REFERANCE VOLTAGE INPUT
WR	; WRITE SIGNAL INPUT
WR+	; POSITIVE WRITE OUTPUT


WR+ 11
AMP1− 12
AMP1+/WR− 13
AMP1 14
SW1 15
AMP2+ 16
AMP2 17
SW2 18
VREF 19
AMP1
SW1
L=ON
AMP2 x10
SCH1
SW2
H
H
V−I
9 WR
8 CAP
SW3
H
H
3.5V
1.5V
7 HW/SW3
6 SWC
5 AMP3−
4 AMP3+
AMP3
3 AMP3
2 SCH2IN
SCH2
1 SCH2OUT

MC10H116M (MOTOROLA) FLAT PACKAGE

ECL TRIPLE DIFFERENTIAL OR/NOR LINE RECEIVERS

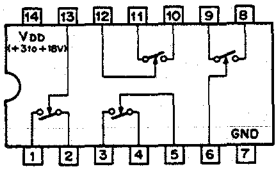
– TOP VIEW –

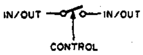

16
15
14
13
12
11
10
9
GND
VBB
GND
VEE
(-5.2V)
1
2
3
4
5
6
7
8

MC14066BCP (MOTOROLA)

C-MOS QUAD BILATERAL ANALOG SWITCH

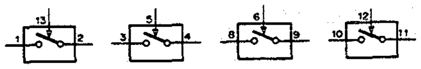
– TOP VIEW –


14
13
12
11
10
9
8
VDD
(+3to+18V)
GND
1
2
3
4
5
6
7


IN/OUT
IN/OUT
CONTROL

CONTROL	SWITCH
0	OFF
1	ON

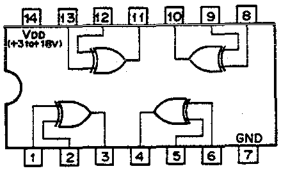
0; LOW LEVEL
1; HIGH LEVEL


13
1
2
5
3
4
6
8
9
12
10
11

MC14070BCP (MOTOROLA)

C-MOS QUAD EXCLUSIVE OR GATES

– TOP VIEW –


14
13
12
11
10
9
8
VDD
(+3to18V)
GND
1
2
3
4
5
6
7

$Y = \bar{A}\cdot B + A\cdot\bar{B}$

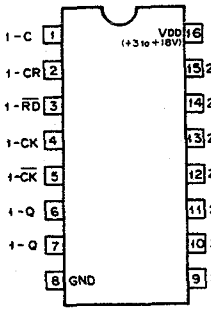
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

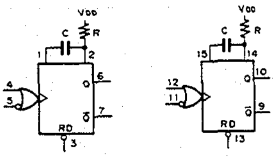
0; LOW LEVEL
1; HIGH LEVEL

MC14538BCP (MOTOROLA)
MC14538BF (MOTOROLA) FLAT PACKAGE

C-MOS DUAL RETRIGGERABLE MONOSTABLE MULTIVIBRATORS

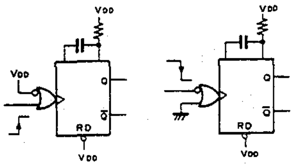
– TOP VIEW –


1-C 1
1-CR 2
1-$\overline{RD}$ 3
1-CK 4
1-$\overline{CK}$ 5
1-Q 6
1-$\overline{Q}$ 7
8 GND
VDD 16
(+3to+18V)
15 2-C
14 2-CR
13 2-$\overline{RD}$
12 2-CK
11 2-$\overline{CK}$
10 2-Q
9 2-$\overline{Q}$

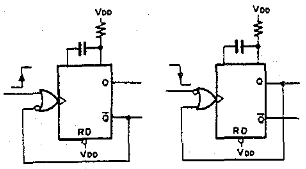

VDD
C
R
1
2
4
5
6
7
Q
$\overline{Q}$
RD
3
VDD
C
R
15
14
12
11
10
9
Q
$\overline{Q}$
RD
13

OUTPUT PULSE WIDTH = C·R

RETRIGGERABLE M.M.V


VDD
VDD
Q
$\overline{Q}$
RD
VDD
VDD
Q
$\overline{Q}$
RD
VDD

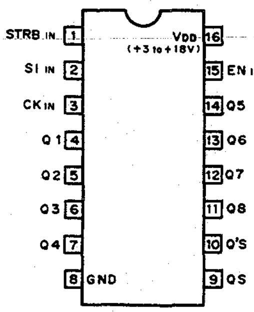
NON-RETRIGGERABLE M.M.V

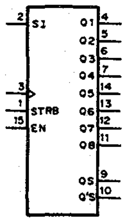

VDD
Q
$\overline{Q}$
RD
VDD
VDD
Q
$\overline{Q}$
RD
VDD

MC14094BCP (MOTOROLA)
TC4094BP (TOSHIBA)

C-MOS 8-STAGE SHIFT-AND-STORE BUS REGISTER

– TOP VIEW –


STRB IN 1
SI IN 2
CK IN 3
Q1 4
Q2 5
Q3 6
Q4 7
8 GND
VDD 16
(+3to+18V)
15 EN IN
14 Q5
13 Q6
12 Q7
11 Q8
10 Q'S
9 QS


2
SI
3
1
STRB
15
EN
Q1 4
Q2 5
Q3 6
Q4 7
Q5 14
Q6 13
Q7 12
Q8 11
QS 9
Q'S 10

SI : SERIAL DATA INPUT
CK : CLOCK INPUT
STRB : STROBE INPUT
EN : OUTPUT ENABLE INPUT
Q1 – Q8 : PARALLEL DATA OUTPUTS
QS, Q'S : SERIAL DATA OUTPUTS

INPUTS				PARALLEL OUT		SERIAL OUT	
CK	EN	STRB	SI	Q1	Qn	QS	Q'S
↑	0	X	X	HI-Z	HI-Z	Q7	NC
↓	0	X	X	HI-Z	HI-Z	NC	Q7
↑	1	0	X	NC	NC	Q7	NC
↑	1	1	0	0	Qn-1	Q7	NC
↑	1	1	1	1	Qn-1	Q7	NC
↓	1	1	1	NC	NC	NC	Q7

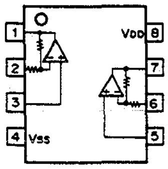
1; HIGH
0; LOW
X; DON'T CARE

HI-Z; HIGH IMPEDANCE
NC ; NO CHANGE

MC14576AF (MOTOROLA) FLAT PACKAGE
MC14576BF (MOTOROLA) FLAT PACKAGE

C-MOS DUAL VIDEO AMPLIFIERS

– TOP VIEW –

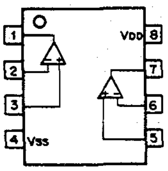

1
2
3
4
VSS
VDD 8
7
6
5

※V_{DD} + |V_{SS}| = +5V to +12V

MC14577AF (MOTOROLA) FLAT PACKAGE
MC14577BF (MOTOROLA) FLAT PACKAGE

C-MOS DUAL VIDEO AMPLIFIERS

– TOP VIEW –

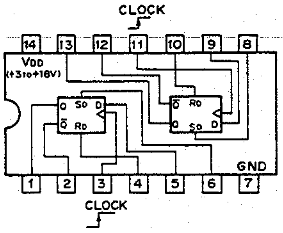

1
2
3
4
VSS
VDD 8
7
6
5

※V_{DD} + |V_{SS}| = +5V to +12V

HD14013BP (HITACHI)
MC14013BCP (MOTOROLA)

C-MOS DUAL D-TYPE FLIP-FLOPS WITH DIRECT SET/RESET

– TOP VIEW –


CLOCK
14
13
12
11
10
9
8
VDD
(+3to+18V)
SD
RD
D
Q
GND
1
2
3
4
5
6
7
CLOCK

DIRECT R-S FLIP-FLOP

SD	RD	Q	$\overline{Q}$
0	0	Qn	$\overline{Qn}$
0	1	0	1
1	0	1	0
1	1	1	1

D-TYPE FLIP-FLOP

CKn	CKn+1
D	Q
0	0
1	1

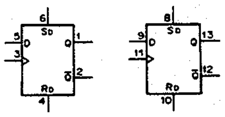
CLOCK CK; ↑

0: LOW LEVEL

1: HIGH LEVEL

CKn; BEFORE CLOCK

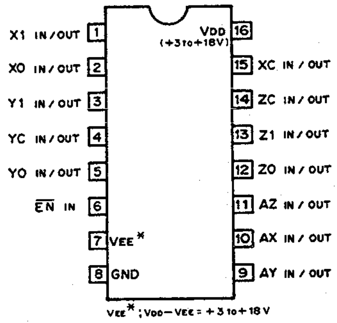
CKn+1; AFTER CLOCK

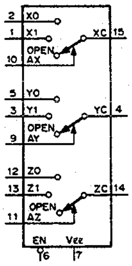

6
5
3
SD
D
Q
1
$\overline{Q}$
2
RD
4
8
9
11
SD
D
Q
13
$\overline{Q}$
12
RD
10

HD14053BFP (HITACHI) FLAT PACKAGE
MC14053BCP (MOTOROLA)
MC14053BF (MOTOROLA) FLAT PACKAGE
UPD4053BC (NEC)

C-MOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXERS/DEMULTIPLEXERS

– TOP VIEW –


X1 IN/OUT 1
X0 IN/OUT 2
Y1 IN/OUT 3
YC IN/OUT 4
Y0 IN/OUT 5
$\overline{EN}$ IN 6
7 VEE*
8 GND
VDD (+3to+18V) 16
15 XC IN/OUT
14 ZC IN/OUT
13 Z1 IN/OUT
12 Z0 IN/OUT
11 AZ IN/OUT
10 AX IN/OUT
9 AY IN/OUT
VEE*; VDD–VEE = +3 to +18V


2 X0
1 X1
OPEN
10 AX
XC 15
5 Y0
3 Y1
OPEN
9 AY
YC 4
12 Z0
13 Z1
OPEN
11 AZ
ZC 14
EN
VEE
6
7

CONT. INPUTS		ON CHANNEL
EN	A (X,Y,Z,)	
0	0	0
0	1	1
1	X	OPEN

0; LOW LEVEL

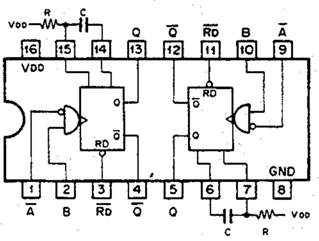
1; HIGH LEVEL

X; DON'T CARE.

MC74HC123AF (MOTOROLA) FLAT PACKAGE
TC74HC123AF (TOSHIBA) FLAT PACKAGE

C-MOS DUAL RETRIGGERABLE MONOSTABLE MULTIVIBRATORS

– TOP VIEW –


VDD
R
C
Q
$\overline{Q}$
$\overline{RD}$
B
$\overline{A}$
16
15
14
13
12
11
10
9
VDD
RD
GND
1
2
3
4
5
6
7
8
$\overline{A}$
B
$\overline{RD}$
$\overline{Q}$
Q
C
R
VDD

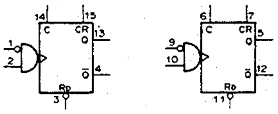
INPUT			OUTPUT	
RD	A	B	Q	$\overline{Q}$
0	X	X	0	1
1	1	X	0	1
1	X	0	0	1
1	0	↑	⎍	⊔
1	↓	1	⎍	⊔
↑	0	1	⎍	⊔

0; LOW LEVEL

1; HIGH LEVEL

X; DON'T CARE

OUTPUT PULSE WIDTH = 0.46CR


14
15
1
2
C
CR
13
Q
$\overline{Q}$
4
RD
3
6
7
9
10
C
CR
5
Q
$\overline{Q}$
12
RD
11

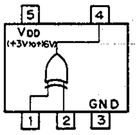
NOTE :

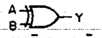
TYPE	VDD
TC74HCT123AF	+5V
OTHER TYPES	+2 to +6V

TC4S30F (TOSHIBA) FLAT PACKAGE

C-MOS EXCLUSIVE OR GATE

– TOP VIEW –


5
4
VDD
(+3Vto+6V)
GND
1
2
3



$Y = \overline{A} \cdot B + A \cdot \overline{B}$

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

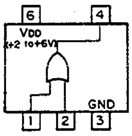
0; LOW LEVEL

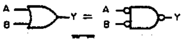
1; HIGH LEVEL

SC7S32F (MOTOROLA) FLAT PACKAGE
TC7S32F (TOSHIBA) FLAT PACKAGE

C-MOS 2-INPUT OR GATE

– TOP VIEW –


6
4
VDD
(+2 to+6V)
GND
1
2
3



$Y = A + B = \overline{\overline{A} \cdot \overline{B}}$

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

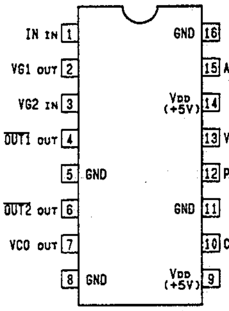
0; LOW LEVEL

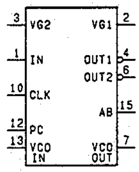
1; HIGH LEVEL

CXL1506M (SONY) FLAT PACKAGE

C-MOS CCD 1H/2H DELAY LINE FOR PAL VIDEO SYSTEM

– TOP VIEW –


IN IN 1
VG1 OUT 2
VG2 IN 3
$\overline{OUT1}$ OUT 4
5 GND
$\overline{OUT2}$ OUT 6
VCO OUT 7
8 GND
GND 16
15 AB OUT
VDD (+5V) 14
13 VCO IN
12 PC OUT
GND 11
10 CLK IN
VDD (+5V) 9


3
VG2
VG1
2
1
IN
OUT1
4
OUT2
6
10
CLK
AB
15
12
PC
13
VCO IN
VCO OUT
7

AB ; AUTO BIAS DC OUTPUT

CLK ; fsc CLOCK INPUT (4.433619 MHz)

IN ; POSITIVE SIGNAL INPUT

OUT1 ; 1H DELAY SIGNAL OUTPUT (NEGATIVE)

OUT2 ; 2H DELAY SIGNAL OUTPUT (NEGATIVE)

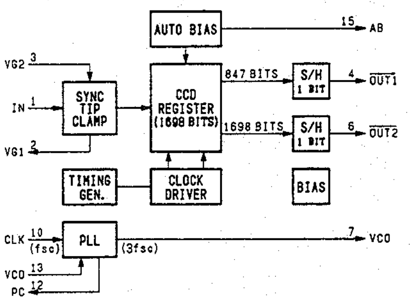
PC ; PHASE COMPARATER OUTPUT

VCO ; 3 • fsc CLOCK OUTPUT (PIN 7)

VCO ; VCO INPUT (PIN 13)

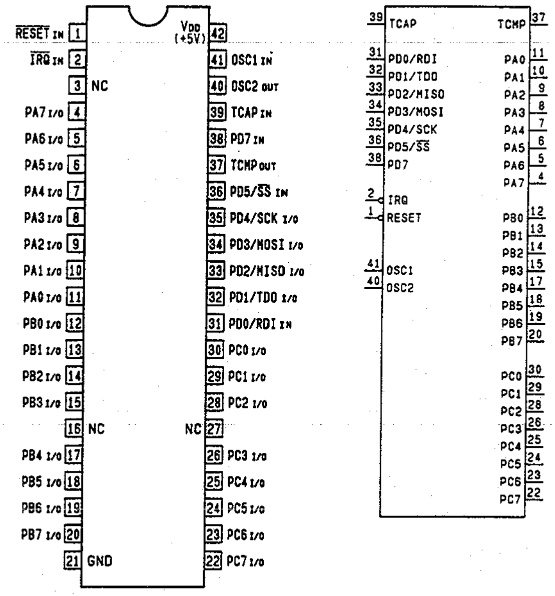
VG1 ; GATE BIAS 1 DC OUTPUT

VG2 ; GATE BIAS 2 DC INPUT


AUTO BIAS
15
AB
VG2
3
IN
1
SYNC TIP CLAMP
VG1
2
CCD REGISTER (1698 BITS)
847 BITS
S/H 1 BIT
4
$\overline{OUT1}$
1698 BITS
S/H 1 BIT
6
$\overline{OUT2}$
TIMING GEN.
CLOCK DRIVER
BIAS
CLK
10
(fsc)
PLL
(3fsc)
7
VCO
VCO
13
PC
12

MC68HC05C4 (MOTOROLA)

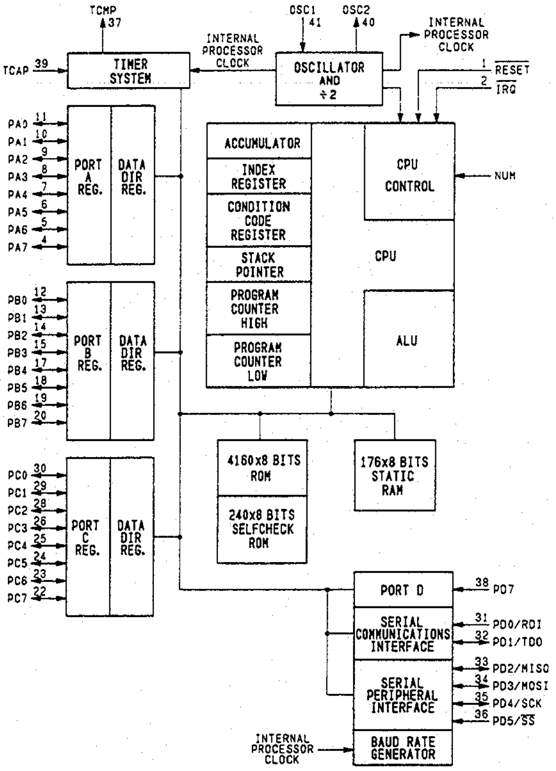
C-MOS 8-BIT MICROCONTROLLER UNIT
– TOP VIEW –


RESET IN 1
IRQ IN 2
3 NC
PA7 I/O 4
PA6 I/O 5
PA5 I/O 6
PA4 I/O 7
PA3 I/O 8
PA2 I/O 9
PA1 I/O 10
PA0 I/O 11
PB0 I/O 12
PB1 I/O 13
PB2 I/O 14
PB3 I/O 15
16 NC
PB4 I/O 17
PB5 I/O 18
PB6 I/O 19
PB7 I/O 20
21 GND
VDD (+5V) 42
41 OSC1 IN
40 OSC2 OUT
39 TCAP IN
38 PD7 IN
37 TCMP OUT
36 PD5/SS IN
35 PD4/SCK I/O
34 PD3/MOSI I/O
33 PD2/MISO I/O
32 PD1/TDO I/O
31 PD0/RDI IN
30 PC0 I/O
29 PC1 I/O
28 PC2 I/O
NC 27
26 PC3 I/O
25 PC4 I/O
24 PC5 I/O
23 PC6 I/O
22 PC7 I/O
39 TCAP
TCMP 37
31 PD0/RDI
32 PD1/TDO
33 PD2/MISO
34 PD3/MOSI
35 PD4/SCK
36 PD5/SS
38 PD7
2 IRQ
1 RESET
41 OSC1
40 OSC2
PA0 11
PA1 10
PA2 9
PA3 8
PA4 7
PA5 6
PA6 5
PA7 4
PB0 12
PB1 13
PB2 14
PB3 15
PB4 17
PB5 18
PB6 19
PB7 20
PC0 30
PC1 29
PC2 28
PC3 26
PC4 25
PC5 24
PC6 23
PC7 22

INPUT
IRQ : INTERRUPT REQUEST
OSC1 : OSCILLATOR FREQUENCY
PD0 – PD5, PD7 : PROGRAMMABLE D PORT
RDI : RECEIVING DATA
RESET : RESET
SS : SUB SELECT
TCAP : CAPTURE FEATURE FOR THE ON-CHIP PROGRAMMABLE TIMER

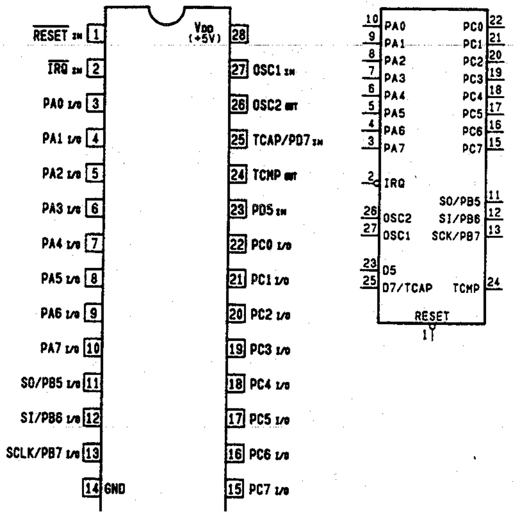
OUTPUT
OSC2 : OSCILLATOR FREQUENCY
SCK : SERIAL CLOCK
TCMP : COMPARE FEATURE OF THE ON-CHIP TIMER
TDO : TRANSMITION DATA

INPUT/OUTPUT
MISO : MASTER INPUT, SUB OUTPUT
MOSI : MASTER OUTPUT, SUB INPUT
PA0 – PA7 : PROGRAMMABLE A PORT
PB0 – PB7 : PROGRAMMABLE B PORT
PC0 – PC7 : PROGRAMMABLE C PORT


TCMP 37
OSC1 41
OSC2 40
INTERNAL PROCESSOR CLOCK
TCAP 39
TIMER SYSTEM
INTERNAL PROCESSOR CLOCK
OSCILLATOR AND ÷2
1 RESET
2 IRQ
PA0 11
PA1 10
PA2 9
PA3 8
PA4 7
PA5 6
PA6 5
PA7 4
PORT A REG.
DATA DIR REG.
ACCUMULATOR
INDEX REGISTER
CONDITION CODE REGISTER
STACK POINTER
PROGRAM COUNTER HIGH
PROGRAM COUNTER LOW
CPU CONTROL
NUM
CPU
ALU
PB0 12
PB1 13
PB2 14
PB3 15
PB4 17
PB5 18
PB6 19
PB7 20
PORT B REG.
DATA DIR REG.
4160x8 BITS ROM
240x8 BITS SELFCHECK ROM
176x8 BITS STATIC RAM
PC0 30
PC1 29
PC2 28
PC3 26
PC4 25
PC5 24
PC6 23
PC7 22
PORT C REG.
DATA DIR REG.
PORT D
38 PD7
SERIAL COMMUNICATIONS INTERFACE
31 PD0/RDI
32 PD1/TDO
SERIAL PERIPHERAL INTERFACE
33 PD2/MISO
34 PD3/MOSI
35 PD4/SCK
36 PD5/SS
INTERNAL PROCESSOR CLOCK
BAUD RATE GENERATOR

MC68HC05P7BSC402047B (MOTOROLA)

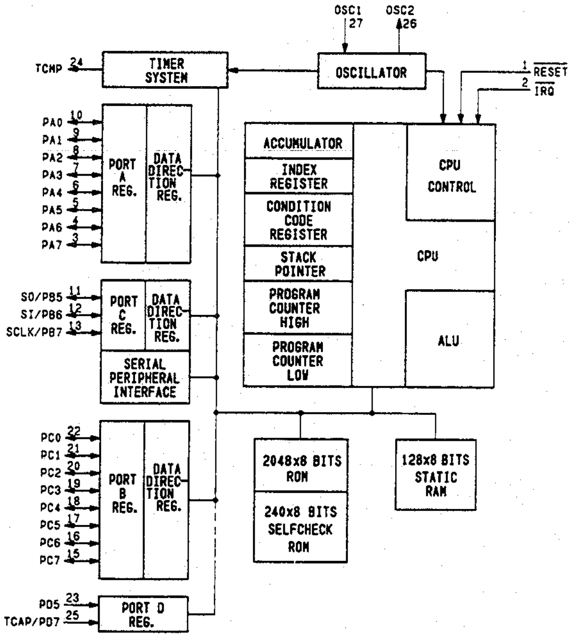
C-MOS 8-BIT 1-CHIP MICROCONTROLLER UNIT
– TOP VIEW –


RESET IN 1
IRQ IN 2
PA0 I/O 3
PA1 I/O 4
PA2 I/O 5
PA3 I/O 6
PA4 I/O 7
PA5 I/O 8
PA6 I/O 9
PA7 I/O 10
SO/PB5 I/O 11
SI/PB6 I/O 12
SCLK/PB7 I/O 13
14 GND
VDD (+5V) 28
27 OSC1 IN
26 OSC2 OUT
25 TCAP/PD7 IN
24 TCMP OUT
23 PD5 IN
22 PC0 I/O
21 PC1 I/O
20 PC2 I/O
19 PC3 I/O
18 PC4 I/O
17 PC5 I/O
16 PC6 I/O
15 PC7 I/O
10 PA0
9 PA1
8 PA2
7 PA3
6 PA4
5 PA5
4 PA6
3 PA7
2 IRQ
26 OSC2
27 OSC1
23 D5
25 D7/TCAP
PC0 22
PC1 21
PC2 20
PC3 19
PC4 18
PC5 17
PC6 16
PC7 15
SO/PB5 11
SI/PB6 12
SCK/PB7 13
TCMP 24
RESET 1

INPUT
IRQ : INTERRUPT REQUEST INPUT
OSC1 : EXTERNAL CLOCK INPUT OR CRYSTAL CONNECTION
PD3, PD5 : D PORT INPUT
RESET : RESET INPUT
SI : SERIAL DATA INPUT
TCAP : CAPTURE FEATURE INPUT FOR TIMER SYSTEM

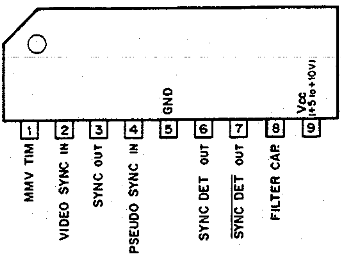
OUTPUT
OSC2 : CRYSTAL CONNECTION
SO : SERIAL DATA OUTPUT
TCMP : COMPARE FEATURE OUTPUT OF TIMER SYSTEM

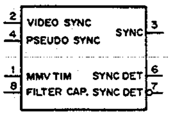
INPUT/OUTPUT
PA0–PA7 : PROGRAMMABLE A PORT
PB5–PB7 : PROGRAMMABLE B PORT
PC0–PC7 : PROGRAMMABLE C PORT
SCLK : SERIAL INTERFACE'S CLOCK INPUT/OUTPUT

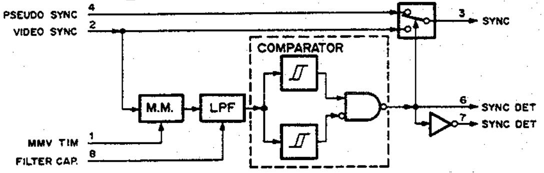

OSC1 27
OSC2 26
TCMP 24
TIMER SYSTEM
OSCILLATOR
1 RESET
2 IRQ
PA0 10
PA1 9
PA2 8
PA3 7
PA4 6
PA5 5
PA6 4
PA7 3
PORT A REG.
DATA DIRECTION REG.
ACCUMULATOR
INDEX REGISTER
CONDITION CODE REGISTER
STACK POINTER
PROGRAM COUNTER HIGH
PROGRAM COUNTER LOW
CPU CONTROL
CPU
ALU
SO/PB5 11
SI/PB6 12
SCLK/PB7 13
PORT C REG.
DATA DIRECTION REG.
SERIAL PERIPHERAL INTERFACE
PC0 22
PC1 21
PC2 20
PC3 19
PC4 18
PC5 17
PC6 16
PC7 15
PORT B REG.
DATA DIRECTION REG.
2048x8 BITS ROM
240x8 BITS SELFCHECK ROM
128x8 BITS STATIC RAM
PD5 23
TCAP/PD7 25
PORT D REG.

NJM2220S (JRC)

VIDEO SYNC DETECTOR
– SIDE VIEW –

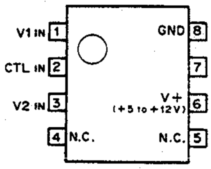

GND
Vcc (+5 to +10V)
1
2
3
4
5
6
7
8
9
MMV TIM
VIDEO SYNC IN
SYNC OUT
PSEUDO SYNC IN
SYNC DET OUT
SYNC DET OUT
FILTER CAP.

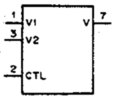

2 VIDEO SYNC
4 PSEUDO SYNC
SYNC 3
1 MMV TIM
8 FILTER CAP.
SYNC DET 6
SYNC DET 7

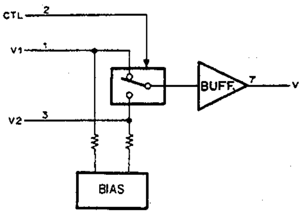

PSEUDO SYNC 4
VIDEO SYNC 2
3 SYNC
COMPARATOR
M.M.
LPF
6 SYNC DET
7 SYNC DET
MMV TIM 1
FILTER CAP. 8

NJM2233BM (JRC) FLAT PACKAGE

2-INPUT VIDEO SIGNAL SWITCH
– TOP VIEW –


V1 IN 1
CTL IN 2
V2 IN 3
4 N.C.
GND 8
7 V OUT
V+ (+5 to +12V) 6
N.C. 5


1 V1
3 V2
2 CTL
V 7

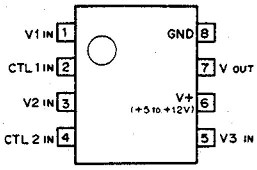

CTL 2
V1 1
V2 3
BUFF.
7 V
BIAS

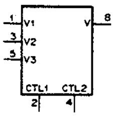
CTL	V
0	V1
1	V2

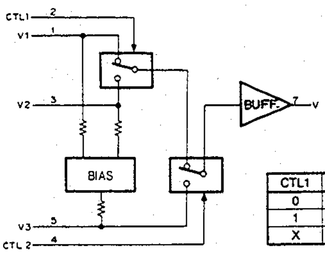
0 : LOW LEVEL
1 : HIGH LEVEL

NJM2234M (JRC) FLAT PACKAGE

3-INPUT VIDEO SIGNAL SWITCH
– TOP VIEW –


V1 IN 1
CTL 1 IN 2
V2 IN 3
CTL 2 IN 4
GND 8
7 V OUT
V+ (+5 to +12V) 6
5 V3 IN


1 V1
3 V2
5 V3
V 8
CTL1 CTL2
2 4

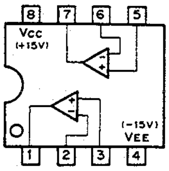

CTL1 2
V1 1
V2 3
BUFF.
7 V
BIAS
V3 5
CTL 2 4

CTL1	CTL2	V
0	0	V1
1	0	V2
X	1	V3

0 : LOW LEVEL
1 : HIGH LEVEL
X : DON'T CARE

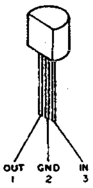
NJM4560D (JRC)
NJM4560MD (JRC) FLAT PACKAGE
NJM5532D-D (JRC)
NJM5532M (JRC) FLAT PACKAGE
RC4560D (RAYTHEON)
RC5532DD (RAYTHEON)
RC5532M (RAYTHEON) FLAT PACKAGE

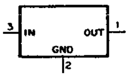
DUAL OPERATIONAL AMPLIFIER
– TOP VIEW –


8
7
6
5
Vcc (+15V)
(–15V) VEE
1
2
3
4

NJM78L05A (JRC) +5V (100mA)
NJM78L09A (JRC) +9V (100mA)
RC78L05A (RAYTHEON) +5V (100mA)
RC78L09A (RAYTHEON) +9V (100mA)

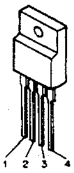
POSITIVE VOLTAGE REGULATOR

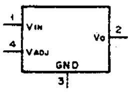

OUT 1
GND 2
IN 3


3 IN
OUT 1
GND
2

PQ05RF2V (SHARP) +5V

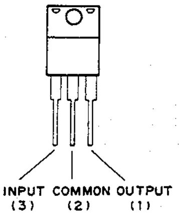
POSITIVE VOLTAGE REGULATOR (2A)

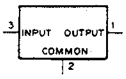



1 VIN
4 VADJ
Vo 2
GND
3

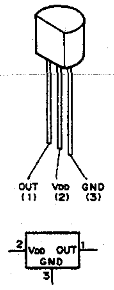
NJM7809FA (JRC) +9V
RC7809FA (RAYTHEON) +9V

POSITIVE VOLTAGE REGULATOR
– FRONT VIEW –

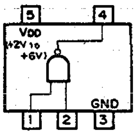

INPUT (3)
COMMON (2)
OUTPUT (1)

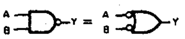

3 INPUT
OUTPUT 1
COMMON
2

S-8054HNM (SEIKO I AND E) 4.50V – 4.70V
C-MOS VOLTAGE DETECTOR


OUT (1)
VDD (2)
GND (3)
2
VDD
OUT
1
GND
3

SC7S00F (MOTOROLA) FLAT PACKAGE
TC7S00F (TOSHIBA) FLAT PACKAGE
C-MOS 2-INPUT NAND GATE
– TOP VIEW –


5
4
VDD
(+2V to +6V)
GND
1
2
3

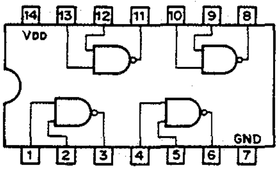


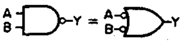
$Y=\overline{A\cdot B}=\overline{A}+\overline{B}$

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

74F00SJ (NS) FLAT PACKAGE
SN74HC00ANS (TI) FLAT PACKAGE
C-MOS QUAD 2-INPUT NAND GATES
– TOP VIEW –


14
13
12
11
10
9
8
VDD
GND
1
2
3
4
5
6
7



$Y=\overline{A\cdot B}=\overline{A}+\overline{B}$

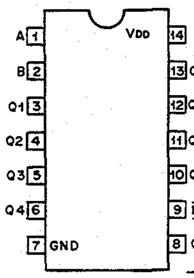
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

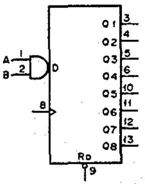
0; LOW LEVEL
1; HIGH LEVEL

NOTE :

TYPE	VDD
74F00SJ	+5V
SN74HC00ANS	+2 to +6V

SN74HC164ANS (TI) FLAT PACKAGE
C-MOS 8-BIT SERIAL-IN/PARALLEL-OUT SHIFT REGISTER
– TOP VIEW –


A 1
B 2
Q1 3
Q2 4
Q3 5
Q4 6
7 GND
VDD 14
13 Q8
12 Q7
11 Q6
10 Q5
9 RD
8 CK

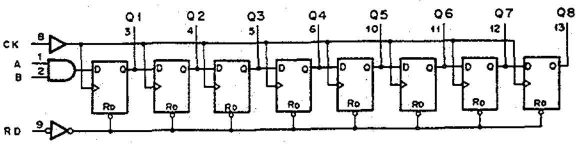

A 1
B 2
D
8
Q1 3
Q2 4
Q3 5
Q4 6
Q5 10
Q6 11
Q7 12
Q8 13
RD
9

INPUTS				OUTPUTS			
RD	CK	A	B	Q1	Q2	----	Q8
0	X	X	X	0	0	0	0
1	0	X	X	Q1o	Q2o	----	Q8o
1	_⌐	1	1	1	Q1n	----	Q7n
1	_⌐	0	X	0	Q1n	----	Q7n
1	_⌐	X	0	0	Q1n	----	Q7n

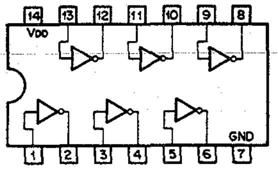
0;LOW LEVEL
1;HIGH LEVEL
X;DON'T CARE

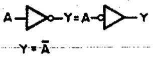
NOTE :

TYPE	VDD
TC74AC164 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V


Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
3
4
5
6
10
11
12
13
CK
8
A
1
B
2
D
Q
RD
RD
9

SN74HC04ANS (TI) FLAT PACKAGE
C-MOS HEX INVERTERS
– TOP VIEW –


14
13
12
11
10
9
8
VDD
GND
1
2
3
4
5
6
7



$Y=\overline{A}$

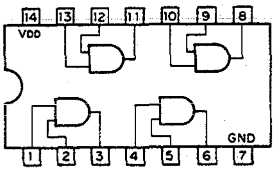
A	Y
0	1
1	0

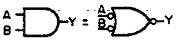
0:LOW LEVEL
1:HIGH LEVEL

NOTE :

TYPE	VDD
74HCT04 TYPE	+5V
TC74AC04 TYPE	+2 to +5.5V
74ACT04 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC08ANS (TI) FLAT PACKAGE
C-MOS QUAD 2-INPUT AND GATES
– TOP VIEW –


14
13
12
11
10
9
8
VDD
GND
1
2
3
4
5
6
7



$Y=A\cdot B=\overline{\overline{A}+\overline{B}}$

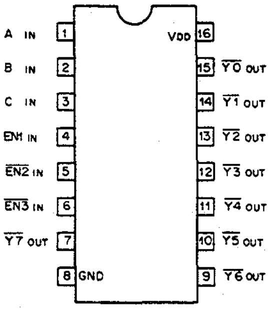
A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

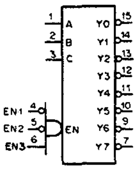
0; LOW LEVEL
1; HIGH LEVEL

NOTE :

TYPE	VDD
TC74AC08F	+2 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC138AN (TI)
C-MOS 3-TO-8 LINE DECODER/DEMULTIPLEXER
– TOP VIEW –


A IN 1
B IN 2
C IN 3
EN1 IN 4
EN2 IN 5
EN3 IN 6
Y7 OUT 7
8 GND
VDD 16
15 Y0 OUT
14 Y1 OUT
13 Y2 OUT
12 Y3 OUT
11 Y4 OUT
10 Y5 OUT
9 Y6 OUT


1 A
2 B
3 C
EN1 4
EN2 5
EN3 6
EN
Y0 15
Y1 14
Y2 13
Y3 12
Y4 11
Y5 10
Y6 9
Y7 7

INPUTS				OUTPUTS							
EN	C	B	A	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0
0	X	X	X	1	1	1	1	1	1	1	1
1	0	0	0	1	1	1	1	1	1	1	0
1	0	0	1	1	1	1	1	1	1	0	1
1	0	1	0	1	1	1	1	1	0	1	1
1	0	1	1	1	1	1	1	0	1	1	1
1	1	0	0	1	1	1	0	1	1	1	1
1	1	0	1	1	1	0	1	1	1	1	1
1	1	1	0	1	0	1	1	1	1	1	1
1	1	1	1	0	1	1	1	1	1	1	1

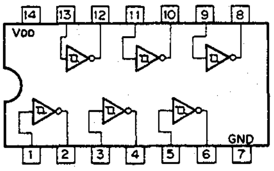
$EN=\overline{EN1}\cdot\overline{EN2}\cdot EN3$

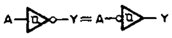
0 : LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

NOTE :

TYPE	VDD
74HCT138 TYPE	+5V
74ACT138 TYPE	+4.5 to +5.5V
TC74AC138 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC14AN (TI)
C-MOS HEX SCHMITT TRIGGER INVERTERS
– TOP VIEW –

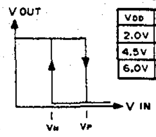

14
13
12
11
10
9
8
VDD
GND
1
2
3
4
5
6
7



$Y=\overline{A}$

A	Y
0	1
1	0

0;LOW LEVEL
1;HIGH LEVEL



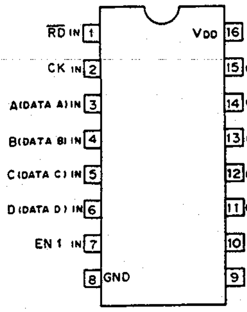
VDD	VN	VP
2.0V	0.75V	1.25V
4.5V	1.9V	2.7V
6.0V	2.6V	3.6V

NOTE :

TYPE	VDD
TC74AC14 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC163ANS (TI) FLAT PACKAGE

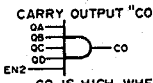
C-MOS PRESETTABLE SYNCHRONOUS 4-BIT BINARY COUNTER
- TOP VIEW -


$\overline{RD}$ IN 1
CK IN 2
A(DATA A) IN 3
B(DATA B) IN 4
C(DATA C) IN 5
D(DATA D) IN 6
EN 1 IN 7
8 GND
VDD 16
15 CO OUT
14 QA OUT
13 QB OUT
12 QC OUT
11 QD OUT
10 EN2 IN
9 $\overline{LD}$ IN

MODE SELECTION

CONTROL INPUTS				MODE
RD	LD	EN1	EN2	
0	X	X	X	RESET (SYNCHRONOUS)
1	0	X	X	PRESET (SYNCHRONOUS)
1	1	0	X	NO COUNT
1	1	X	0	NO COUNT
1	1	1	1	COUNT

CARRY OUTPUT "CO"


QA
QB
QC
QD
EN2
CO

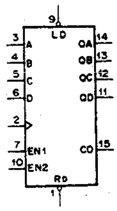
CO IS HIGH WHEN EN2 INPUT IS HIGH AND COUNT IS "15".

NOTE :

TYPE	VDD
74ACT163 TYPE	+4.5 to +5.5V
TC74AC163 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V

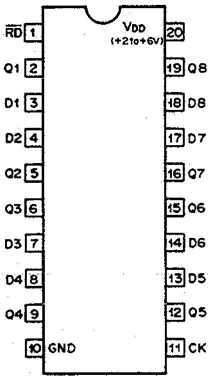
COUNT SEQUENCE

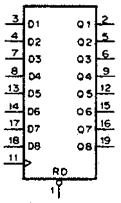
COUNT	OUTPUTS			
	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1


9
LD
3 A
4 B
5 C
6 D
2
7 EN1
10 EN2
RD
1
QA 14
QB 13
QC 12
QD 11
CO 15

SN74HC273ANS (TI) FLAT PACKAGE

C-MOS OCTAL D-TYPE FLIP-FLOPS WITH RESET
- TOP VIEW -

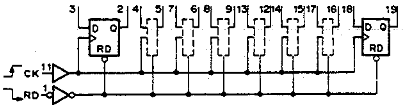

$\overline{RD}$ 1
Q1 2
D1 3
D2 4
Q2 5
Q3 6
D3 7
D4 8
Q4 9
10 GND
VDD (+2to+6V) 20
19 Q8
18 D8
17 D7
16 Q7
15 Q6
14 D6
13 D5
12 Q5
11 CK


3 D1
4 D2
7 D3
8 D4
13 D5
14 D6
17 D7
18 D8
11
RD
1
Q1 2
Q2 5
Q3 6
Q4 9
Q5 12
Q6 15
Q7 16
Q8 19

EACH FLIP-FLOP

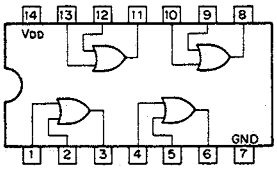
INPUT			OUT
RD	CK	D	Q
0	X	X	0
1	↑	0	0
1	↑	1	1
1	0	X	Qo

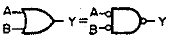
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE


3
2
4
5
7
6
8
9
13
12
14
15
17
16
18
19
D Q
RD
CK 11
RD 1

SN74HC32ANS (TI) FLAT PACKAGE

C-MOS QUAD 2-INPUT OR GATES
- TOP VIEW -


14
13
12
11
10
9
8
VDD
1
2
3
4
5
6
7
GND



$Y = A + B = \overline{\overline{A} \cdot \overline{B}}$

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

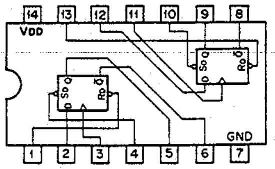
0:LOW LEVEL
1:HIGH LEVEL

NOTE :

TYPE	VDD
TC74AC32 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V

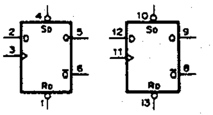
SN74HC74ANS (TI) FLAT PACKAGE

C-MOS DUAL D-TYPE FLIP-FLOPS WITH DIRECT SET/RESET
- TOP VIEW -


14
13
12
11
10
9
8
VDD
GND
1
2
3
4
5
6
7
SD
RD

INPUTS				OUTPUTS	
$\overline{S_D}$	$\overline{R_D}$	CK	D	Qn+1	$\overline{Qn+1}$
0	1	X	X	1	0
1	0	X	X	0	1
0	0	X	X	1	1
1	1	↑	1	1	0
1	1	↑	0	0	1
1	1	0	X	Qn	$\overline{Qn}$

0; LOW LEVEL
1 ; HIGH LEVEL
X; DON'T CARE

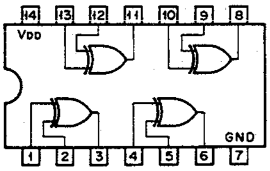

4
SD
2 D
3
RD
1
Q 5
Q̄ 6
10
SD
12 D
11
RD
13
Q 9
Q̄ 8

NOTE :

TYPE	VDD
TC74HCT74AF	+5V
TC74AC74 TYPE	+2 to +5.5V
74ACT74 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC86AN (TI)
SN74HC86ANS (TI) FLAT PACKAGE
TC74HC86AF (TOSHIBA) FLAT PACKAGE

C-MOS QUAD EXCLUSIVE OR GATES
- TOP VIEW -


14
13
12
11
10
9
8
VDD
GND
1
2
3
4
5
6
7

$Y = \overline{A} \cdot B + A \cdot \overline{B}$

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

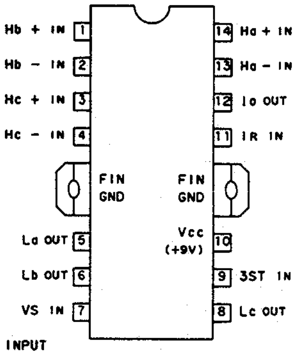
0;LOW LEVEL
1;HIGH LEVEL

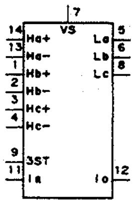
NOTE :

TYPE	VDD
TC74AC86 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V

TA7262P-LB (TOSHIBA)

MOTOR DRIVER FOR DIRECT CURRENT COMPACT MOTOR
- TOP VIEW -


Hb + IN 1
Hb − IN 2
Hc + IN 3
Hc − IN 4
La OUT 5
Lb OUT 6
VS IN 7
14 Ha + IN
13 Ha − IN
12 Io OUT
11 IR IN
10
9 3ST IN
8 Lc OUT
FIN GND
FIN GND
Vcc (+9V)

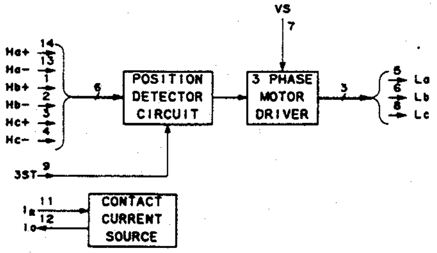

7
VS
14 Ha+
13 Ha−
1 Hb+
2 Hb−
3 Hc+
4 Hc−
9 3ST
11 IR
La 5
Lb 6
Lc 8
Io 12

INPUT

3ST	;MOTOR ROTATIONAL DIRECTION CONTROL
Ha.Hb.Hc +/−	;HOLE ELEMENT AMP
IR	;CONTACT CURRENT SOURCE
VS	;MOTOR INPUT VOLTAGE

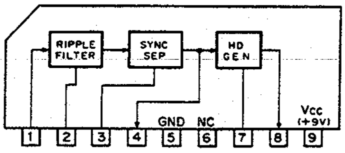
OUTPUT

Io	;CONTACT CURRENT SOURCE
La.Lb.Lc	;3 PHASE MOTOR DRIVE


VS
7
Ha+ 14
Ha− 13
Hb+ 1
Hb− 2
Hc+ 3
Hc− 4
6
POSITION DETECTOR CIRCUIT
3 PHASE MOTOR DRIVER
3
5 La
6 Lb
8 Lc
3ST 9
IR 11
Io 12
CONTACT CURRENT SOURCE

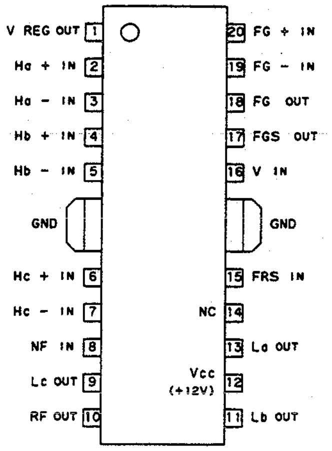
TA7357AP (TOSHIBA)

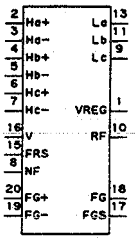
SYNC SEPARATOR/HD PULSE GENERATOR
- SIDE VIEW -


RIPPLE FILTER
SYNC SEP
HD GEN
GND
NC
Vcc (+9V)
1
2
3
4
5
6
7
8
9

TA8424F (TOSHIBA)

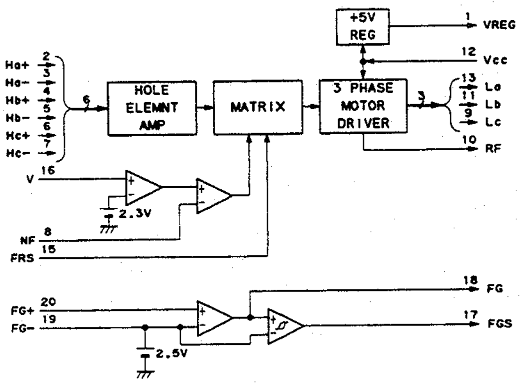
MOTOR DRIVER FOR DIRECT CURRENT COMPACT MOTOR
- TOP VIEW -


V REG OUT 1
Ha + IN 2
Ha - IN 3
Hb + IN 4
Hb - IN 5
GND
Hc + IN 6
Hc - IN 7
NF IN 8
Lc OUT 9
RF OUT 10
20 FG + IN
19 FG - IN
18 FG OUT
17 FGS OUT
16 V IN
GND
15 FRS IN
NC 14
13 La OUT
Vcc (+12V) 12
11 Lb OUT


2 Ha+
3 Ha-
4 Hb+
5 Hb-
6 Hc+
7 Hc-
16 V
15 FRS
8 NF
20 FG+
19 FG-
La 13
Lb 11
Lc 9
VREG 1
RF 10
FG 18
FGS 17

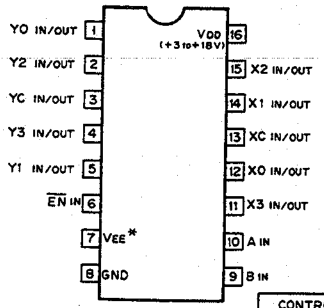
INPUT
FG +/- ;FG INPUT AMP
FRS ;MOTOR ROTATIONAL DIRECTION CONTROL
Ha.Hb.Hc +/-;HOLE ELEMENT AMP
NF ;FEEDBACK OUTPUT CURRENT
V ;CONTROL VOLTAGE

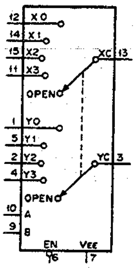
OUTPUT
FG ;FG GAIN AMP
FGS ;FG HYSTERESIS AMP
La.Lb.Lc ;3 PHASE MOTOR DRIVE
RF ;OUTPUT CURRENT DETECTOR
V REG ;VOLTAGE REGULATOR


+5V REG
VREG
Vcc
Ha+
Ha-
Hb+
Hb-
Hc+
Hc-
HOLE ELEMNT AMP
MATRIX
3 PHASE MOTOR DRIVER
La
Lb
Lc
RF
V
2.3V
NF
FRS
FG+
FG-
2.5V
FG
FGS

TC4052BF (TOSHIBA) FLAT PACKAGE

C-MOS DUAL 4-CHANNEL ANALOG MULTIPLEXERS/DEMULTIPLEXERS
- TOP VIEW -


Y0 IN/OUT 1
Y2 IN/OUT 2
YC IN/OUT 3
Y3 IN/OUT 4
Y1 IN/OUT 5
EN IN 6
7 VEE*
8 GND
VDD (+3 to +18V) 16
15 X2 IN/OUT
14 X1 IN/OUT
13 XC IN/OUT
12 X0 IN/OUT
11 X3 IN/OUT
10 A IN
9 B IN


X0
X1
X2
X3
XC
OPEN
Y0
Y1
Y2
Y3
YC
OPEN
A
B
EN
VEE

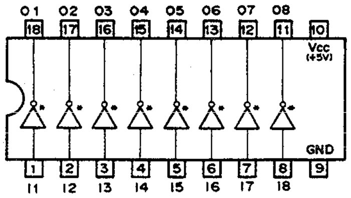
VEE*; VDD-VEE = +3 to +18V

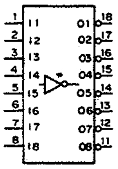
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE.

CONTROL INPUTS			"ON" CHANNEL
EN	B	A	
0	0	0	0
0	0	1	1
0	1	0	2
0	1	1	3
1	X	X	OPEN

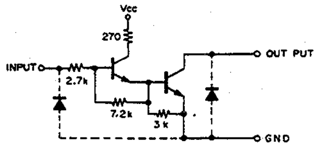
TD62381F (TOSHIBA) FLAT PACKAGE

OCTAL LOW SATURATION DRIVER
- TOP VIEW -


O1
O2
O3
O4
O5
O6
O7
O8
18
17
16
15
14
13
12
11
10
Vcc (+5V)
GND
1
2
3
4
5
6
7
8
9
I1
I2
I3
I4
I5
I6
I7
I8

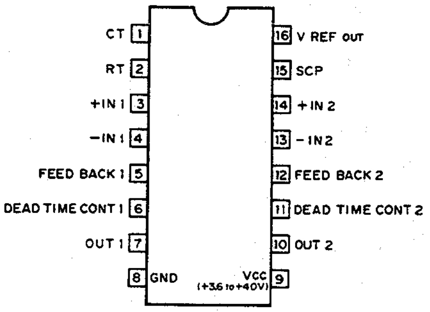

I1
I2
I3
I4
I5
I6
I7
I8
O1
O2
O3
O4
O5
O6
O7
O8

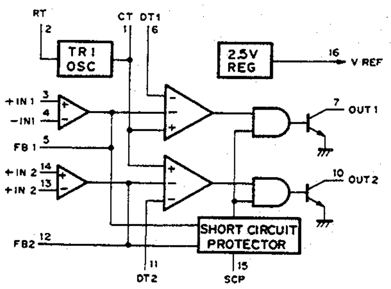
*; OPEN COLLECTOR


Vcc
270
INPUT
2.7k
7.2k
3k
OUT PUT
GND

TL1451ACNS (TI) FLAT PACKAGE

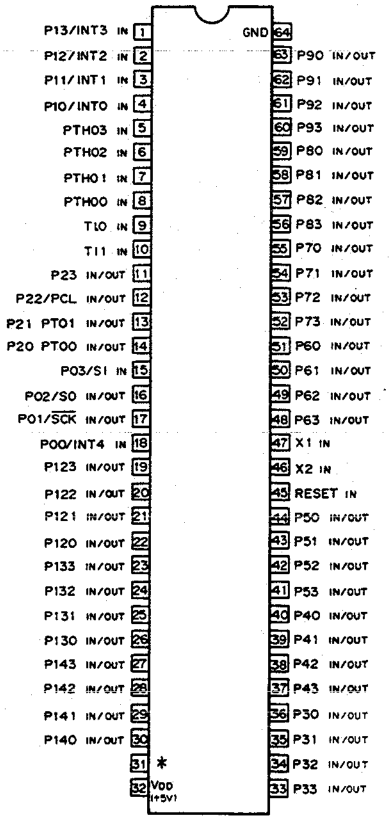
DUAL PWM POWER CONTROLLER
- TOP VIEW -


CT 1
RT 2
+IN 1 3
-IN 1 4
FEED BACK 1 5
DEAD TIME CONT 1 6
OUT 1 7
8 GND
16 V REF OUT
15 SCP
14 +IN 2
13 -IN 2
12 FEED BACK 2
11 DEAD TIME CONT 2
10 OUT 2
Vcc (+3.6 to +40V) 9

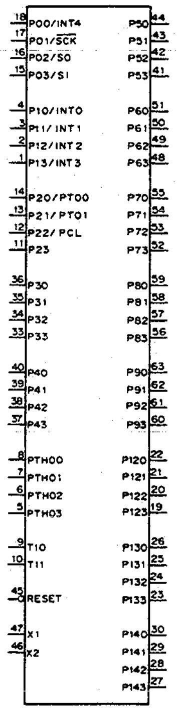

RT
CT DT1
TRI OSC
2.5V REG
V REF
+IN 1
-IN1
FB 1
+IN 2
+IN 2
OUT 1
OUT2
FB2
SHORT CIRCUIT PROTECTOR
DT2
SCP

UPD75108CW (NEC)
UPD75P108CW (NEC)

C-MOS 1 CHIP 4-BIT MICROCOMPUTER
– TOP VIEW –



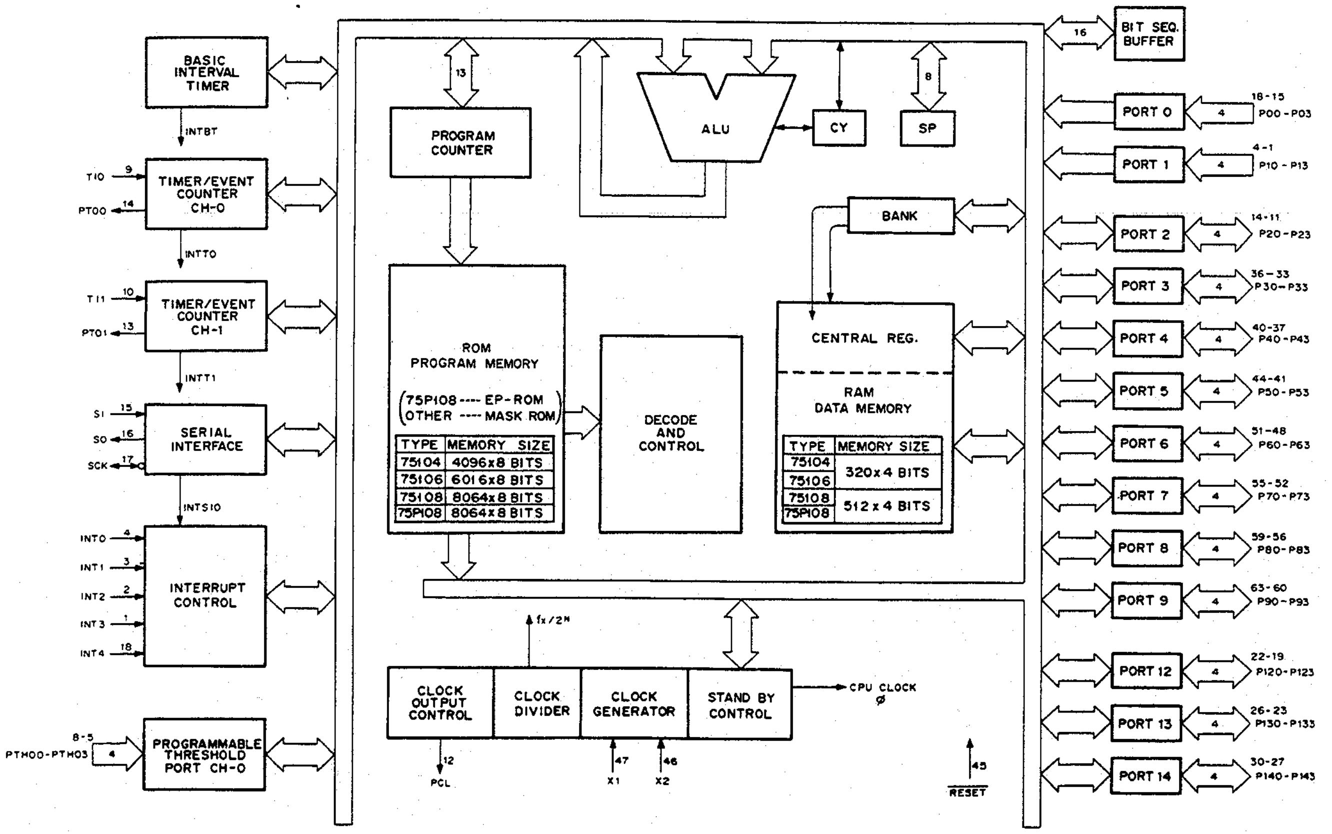
P13/INT3 IN 1
P12/INT2 IN 2
P11/INT1 IN 3
P10/INT0 IN 4
PTH03 IN 5
PTH02 IN 6
PTH01 IN 7
PTH00 IN 8
TI0 IN 9
TI1 IN 10
P23 IN/OUT 11
P22/PCL IN/OUT 12
P21 PTO1 IN/OUT 13
P20 PTO0 IN/OUT 14
P03/SI IN 15
P02/SO IN/OUT 16
P01/SCK IN/OUT 17
P00/INT4 IN 18
P123 IN/OUT 19
P122 IN/OUT 20
P121 IN/OUT 21
P120 IN/OUT 22
P133 IN/OUT 23
P132 IN/OUT 24
P131 IN/OUT 25
P130 IN/OUT 26
P143 IN/OUT 27
P142 IN/OUT 28
P141 IN/OUT 29
P140 IN/OUT 30
31 *
32 VDD (+5V)
GND 64
63 P90 IN/OUT
62 P91 IN/OUT
61 P92 IN/OUT
60 P93 IN/OUT
59 P80 IN/OUT
58 P81 IN/OUT
57 P82 IN/OUT
56 P83 IN/OUT
55 P70 IN/OUT
54 P71 IN/OUT
53 P72 IN/OUT
52 P73 IN/OUT
51 P60 IN/OUT
50 P61 IN/OUT
49 P62 IN/OUT
48 P63 IN/OUT
47 X1 IN
46 X2 IN
45 RESET IN
44 P50 IN/OUT
43 P51 IN/OUT
42 P52 IN/OUT
41 P53 IN/OUT
40 P40 IN/OUT
39 P41 IN/OUT
38 P42 IN/OUT
37 P43 IN/OUT
36 P30 IN/OUT
35 P31 IN/OUT
34 P32 IN/OUT
33 P33 IN/OUT



18 P00/INT4
17 P01/SCK
16 P02/SO
15 P03/SI
4 P10/INT0
3 P11/INT1
2 P12/INT2
1 P13/INT3
14 P20/PTO0
13 P21/PTO1
12 P22/PCL
11 P23
36 P30
35 P31
34 P32
33 P33
40 P40
39 P41
38 P42
37 P43
8 PTH00
7 PTH01
6 PTH02
5 PTH03
9 TI0
10 TI1
45 RESET
47 X1
46 X2
P50 44
P51 43
P52 42
P53 41
P60 51
P61 50
P62 49
P63 48
P70 55
P71 54
P72 53
P73 52
P80 59
P81 58
P82 57
P83 56
P90 63
P91 62
P92 61
P93 60
P120 22
P121 21
P122 20
P123 19
P130 26
P131 25
P132 24
P133 23
P140 30
P141 29
P142 28
P143 27

*; PIN31
Vpp(+5V) ; 75P108 TYPE
NC ; OTHER TYPES

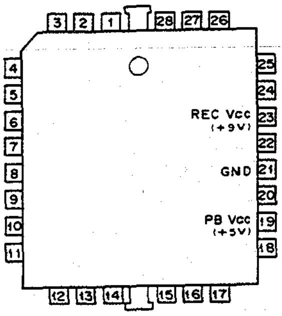
INT0 – INT4	; INTERRUPT INPUTS
P00 – P03	; 4-BIT INPUT PORT (PORT0)
P10 – P13	; 4-BIT INPUT PORT (PORT1)
P20 – P23	; 4-BIT I/O PORT (PORT2)
P30 – P33	; 4-BIT I/O PORT (PORT3), PROGRAMMABLE
P40 – P43	; 4-BIT I/O PORT (PORT4)
P50 – P53	; 4-BIT I/O PORT (PORT5)
P60 – P63	; 4-BIT I/O PORT (PORT6), PROGRAMMABLE
P70 – P73	; 4-BIT I/O PORT (PORT7)
P80 – P83	; 4-BIT I/O PORT (PORT8)
P90 – P93	; 4-BIT I/O PORT (PORT9)
P120 – P123	; 4-BIT I/O PORT (PORT12), OPEN DRAIN
P130 – P133	; 4-BIT I/O PORT (PORT13), OPEN DRAIN
P140 – P143	; 4-BIT I/O PORT (PORT14), OPEN DRAIN
PCL	; CLOCK OUTPUT, PROGRAMABLE
PTH00 – PTH03	; THRESHOLD 4-BIT ANALOG INPUT PORT, PROGRAMABLE
PTO0	; TIMER/EVENT COUNTER OUTPUT (CH-1)
PTO1	; TIMER/EVENT COUNTER OUTPUT (CH-2)
RESET	; SYSTEM RESET INPUT
SI	; SERIAL INTERFACE DATA INPUT
SO	; SERIAL INTERFACE DATA OUTPUT
SCK	; SERIAL INTERFACE CLOCK INPUT/OUTPUT
TI0	; TIMER/EVENT COUNTER CLOCK INPUT (CH-0)
TI1	; TIMER/EVENT COUNTER CLOCK INPUT (CH-1)
X1, X2	; CONNECTED CRYSTAL FOR SYSTEM CLOCK GENERATE



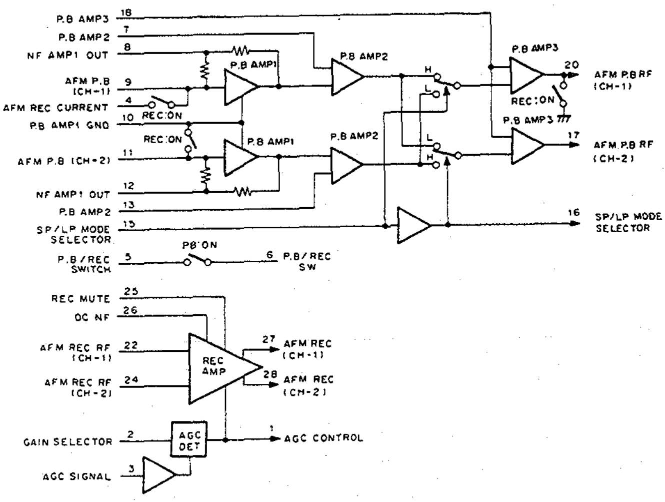
BASIC INTERVAL TIMER
INTBT
TI0 9
PT00 14
TIMER/EVENT COUNTER CH-0
INTT0
TI1 10
PTO1 13
TIMER/EVENT COUNTER CH-1
INTT1
SI 15
SO 16
SCK 17
SERIAL INTERFACE
INTSIO
INT0 4
INT1 3
INT2 2
INT3 1
INT4 18
INTERRUPT CONTROL
8-5
PTH00-PTH03
4
PROGRAMMABLE THRESHOLD PORT CH-0
13
PROGRAM COUNTER
ALU
CY
SP
8
16
BIT SEQ. BUFFER
BANK
ROM PROGRAM MEMORY
(75P108 ---- EP-ROM
OTHER ---- MASK ROM)
TYPE | MEMORY SIZE
75104 | 4096x8 BITS
75106 | 6016x8 BITS
75108 | 8064x8 BITS
75P108 | 8064x8 BITS
DECODE AND CONTROL
CENTRAL REG.
RAM DATA MEMORY
TYPE | MEMORY SIZE
75104, 75106 | 320x4 BITS
75108, 75P108 | 512x4 BITS
fx/2N
CLOCK OUTPUT CONTROL
CLOCK DIVIDER
CLOCK GENERATOR
STAND BY CONTROL
CPU CLOCK Ø
12 PCL
47 X1
46 X2
45 RESET
PORT 0 4 18-15 P00-P03
PORT 1 4 4-1 P10-P13
PORT 2 4 14-11 P20-P23
PORT 3 4 36-33 P30-P33
PORT 4 4 40-37 P40-P43
PORT 5 4 44-41 P50-P53
PORT 6 4 51-48 P60-P63
PORT 7 4 55-52 P70-P73
PORT 8 4 59-56 P80-P83
PORT 9 4 63-60 P90-P93
PORT 12 4 22-19 P120-P123
PORT 13 4 26-23 P130-P133
PORT 14 4 30-27 P140-P143

HA12115MP (HITACHI)

REC/PLAY AMPLIFIER FOR Hi-Fi VHS
- TOP VIEW -

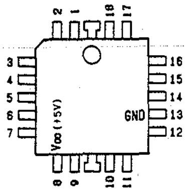

3
2
1
28
27
26
4
5
6
7
8
9
10
11
25
24
23
22
21
20
19
18
REC Vcc (+9V)
GND
PB Vcc (+5V)
12
13
14
15
16
17

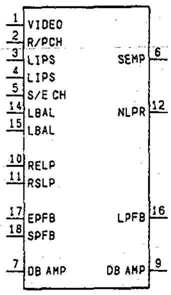
PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	O	AGC CONTROL	15	I	SP/LP MODE SELECTOR
2	I	GAIN SELECTOR	16	O	SP/LP MODE SELECTOR
3	I	AGC SIGNAL	17	O	AFM P.B RF (CH-1)
4	I	AFM REC CURRENT	18	I	P.B AMP3
5	I	P.B/REC SWITCH	19	–	P.B Vcc
6	O	P.B/REC SWITCH	20		AFM P.B RF (CH-2)
7	I	P.B AMP2	21	–	GND
8	O	NF AMP1	22	I	AFM REC RF (CH-1)
9	I	AFM P.B (CH-1)	23	–	REC Vcc
10	I	P.B AMP1 GND	24	I	AFM REC RF (CH-2)
11	I	AFM P.B (CH-2)	25	I	REC MUTE
12	I	NF AMP1	26	I	DC NF
13	O	P.B AMP1	27	O	AFM REC (CH-1)
14	–	PRE Vcc	28	O	AFM REC (CH-2)


P.B AMP3 18
P.B AMP2 7
NF AMP1 OUT 8
AFM P.B (CH-1) 9
AFM REC CURRENT 4
PB AMP1 GND 10
REC:ON
AFM P.B (CH-2) 11
NF AMP1 OUT 12
P.B AMP2 13
SP/LP MODE SELECTOR 15
P.B/REC SWITCH 5
PB:ON
6 P.B/REC SW
P.B AMP1
P.B AMP2
P.B AMP3
H
L
REC:ON
20 AFM P.B RF (CH-1)
17 AFM P.B RF (CH-2)
16 SP/LP MODE SELECTOR
REC MUTE 25
DC NF 26
AFM REC RF (CH-1) 22
AFM REC RF (CH-2) 24
REC AMP
27 AFM REC (CH-1)
28 AFM REC (CH-2)
GAIN SELECTOR 2
AGC DET
1 AGC CONTROL
AGC SIGNAL 3

VC2076MP (JVC)

Y SIGNAL PROCESSOR FOR VTR
- TOP VIEW -


2
1
18
17
3
4
5
6
7
16
15
14
13
12
VDD (+5V)
GND
8
9
10
11


1 VIDEO
2 R/PCH
3 LIPS
4 LIPS
5 S/E CH
14 LBAL
15 LBAL
10 RELP
11 RSLP
17 EPFB
18 SPFB
7 DB AMP
SEMP 6
NLPR 12
LPFB 16
DB AMP 9

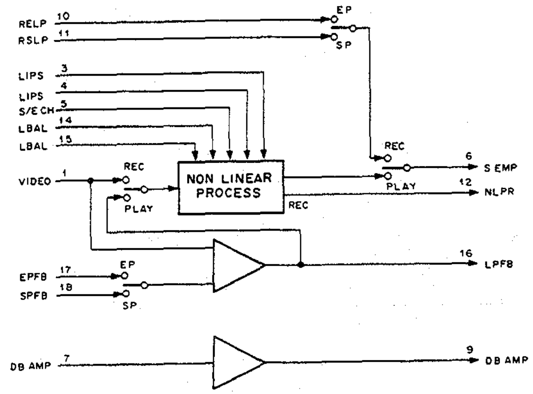
PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	VIDEO	10	I	RELP
2	I	R/P CH	11	I	RSLP
3	I	LIPS	12	O	NLPR
4	I	LIPS	13	–	GND
5	I	S/E CH	14	I	LBAL
6	O	S EMP	15	I	LBAL
7	I	DB AMP	16	O	LPFB
8	–	Vcc	17	I	EPFB
9	O	DB AMP	18	I	SPFB

INPUT

DB AMP : 6dB AMP IN
EPFB : PB EP LINEAR PROCESS FEEDBACK
LBAL : LIMITER BALANCE TERMINAL
LIPS : LIMITER POWER SMOOTHING TERMINAL
R/P CH : REC/PB CHANGE
RELP : REC EP LINEAR PROCESS
RSLP : REC SP LINEAR PROCESS
S/E CH : SP/EP CHANGE
SPFB : PB SP LINEAR PROCESS FEEDBACK
VIDEO : VIDEO IN

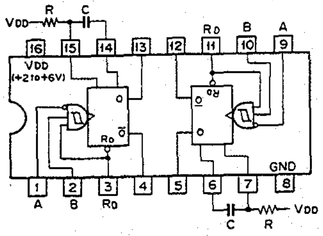
OUTPUT

DB AMP : 6dB AMP OUT
LPFB : PB LINEAR PROCESS FEEDBACK
NLPR : NON LINEAR PROCESS
S EMP : SUB EMPHASIS


RELP 10
RSLP 11
EP
SP
LIPS 3
LIPS 4
S/E CH 5
LBAL 14
LBAL 15
VIDEO 1
REC
PLAY
NON LINEAR PROCESS
REC
REC
PLAY
6 S EMP
12 NLPR
EPFB 17
SPFB 18
EP
SP
16 LPFB
DB AMP 7
9 DB AMP

TC74HC221AF (TOSHIBA) FLAT PACKAGE

C-MOS MONOSTABLE MULTIVIBRATOR WITH SCHMITT TRIGGER INPUT
- TOP VIEW -


VDD
R
C
16
15
14
13
12
11
10
9
RD
B
A
VDD (+2 to +6V)
Q
Q̄
RD
GND
1
2
3
4
5
6
7
8
A
B
RD
C
R
VDD

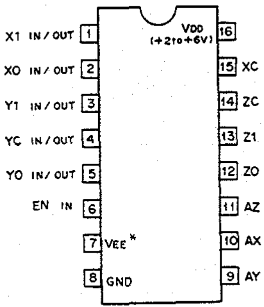
INPUTS			OUTPUTS	
RD	A	B	Q	Q̄
0	X	X	0	1
X	1	X	0	1
X	X	0	0	1
1	0	↑	⎍	⊔
1	↓	1	⎍	⊔
↑	0	1	⎍	⊔

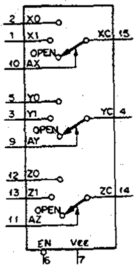
0;LOW LEVEL
1;HIGH LEVEL
X;DON'T CARE

OUTPUT PULSE WIDTH=0.7CR

MC74HC4053F (MOTOROLA) FLAT PACKAGE

C-MOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER
- TOP VIEW -


X1 IN/OUT 1
X0 IN/OUT 2
Y1 IN/OUT 3
YC IN/OUT 4
Y0 IN/OUT 5
EN IN 6
7 VEE*
8 GND
VDD (+2 to +6V) 16
15 XC IN/OUT
14 ZC IN/OUT
13 Z1 IN/OUT
12 Z0 IN/OUT
11 AZ IN/OUT
10 AX IN/OUT
9 AY IN/OUT


2 X0
1 X1
XC 15
OPEN
10 AX
5 Y0
3 Y1
YC 4
OPEN
9 AY
12 Z0
13 Z1
ZC 14
OPEN
11 AZ
EN
VEE
6
7

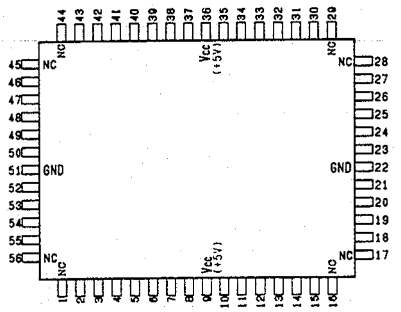
VEE* : VDD−VEE = +3 to +12V
VEE ≦ GND

CONT. INPUTS		ON CHANNEL
EN	A (X,Y,Z,)	
0	0	0
0	1	1
1	X	OPEN

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE.

M52059AFP (MITSUBISHI)

CHROMA SIGNAL PROCESSOR FOR VHS VTR
– TOP VIEW –


44
43
42
41
40
39
38
37
36
35
34
33
32
31
30
29
NC
Vcc (+5V)
NC
45
46
47
48
49
50
51
52
53
54
55
56
NC
GND
NC
28
27
26
25
24
23
22
21
20
19
18
17
NC
GND
NC
NC
Vcc (+5V)
NC
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

(Vcc = + 5V)

PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL
1	–	NC	20	I	REC ACC	39	I	HSS
2	I	MAIN BM	21	I	P/S/N SW	40	–	MMV TIM
3	I	ROTARY SW	22	–	GND	41	O	SUB BM
4	I	P/B P ADJ	23	I	VCO ADJ	42	O	HP
5	I	MAIN BM BP	24	–	B ACC F	43	O	P/B DET
6	O	SW2	25	–	REC AFC F	44	–	NC
7	O	ACC	26	I	B ADJ	45	–	NC
8	I	ACC	27	–	B ERR DET HPF	46	O	BGP
9	–	Vcc	28	–	NC	47	I	2/4/6 SW
10	I	REC C	29	–	NC	48	I	R/T/P SW
11	I	SUB BM BP	30	I	P/B G ADJ	49	O	PB OUT AMP
12	O	SW1	31	O	S/L DET	50	I	CPS/CPN/VHS SW
13	I	PB LOW C	32	–	PB APC F	51	–	GND
14	I	REC OUT AMP	33	–	REC APC F	52	I	COMB AMP
15	O	REC LOW C	34	O	VCXO 1	53	–	KILLER REF
16	–	NC	35	O	VCXO 2	54	O	COMB DRIVE
17	–	NC	36	–	Vcc	55	–	KILLER F
18	I	PB ACC	37	I	VCXO	56	–	NC
19	–	C ACC F	38	–	P/B DET F			

INPUT

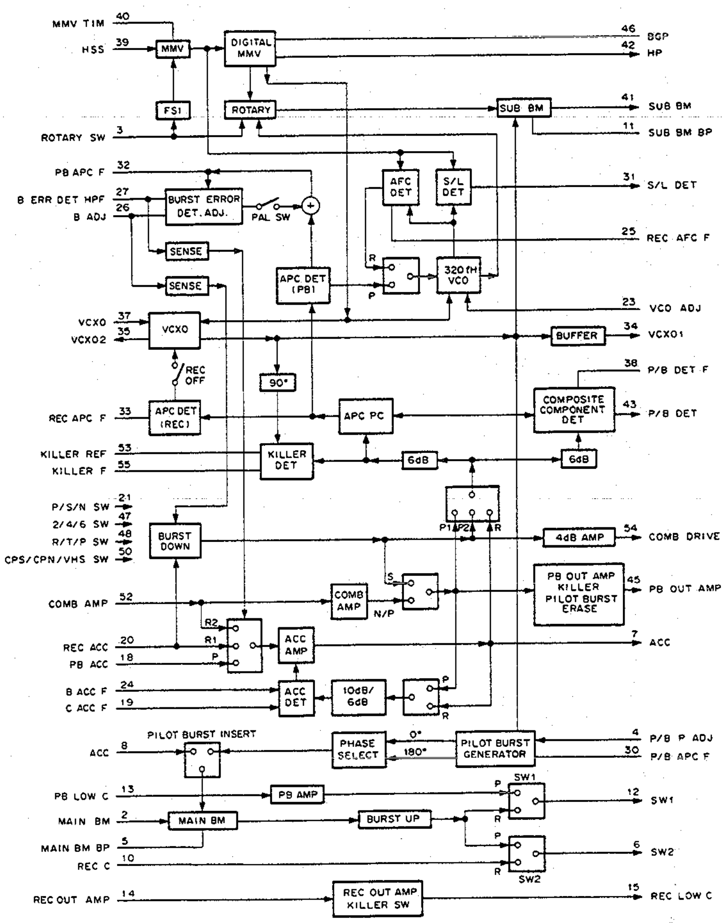
2/4/6 SW : 2H/4H/6H SWITCH CONTROL
ACC : ACC OUTPUT
B ADJ : BURST ADJUST
COMB AMP : COMB AMPLIFIER
CPS/CPN/VHS SW : COMPSITE/COMPONENT/VHS SWITCH CONTROL
HSS : HORIZONTAL SYNC SIGNAL
MAIN BM : MAIN BALANCED MODULATOR
MAIN BM BP : MAIN BALANCED MODULATOR BYPASS CONTROL
P/B G ADJ : PILOT BURST GAIN ADJUST
P/B P ADJ : PILOT BURST PHASE ADJUST
P/S/N SW : PAL/SECAM/NTSC SWITCH CONTROL
PB ACC : AUTOMATIC COLOR CONTROL AMPLIFIER FOR PB
PB LOW C : PB LOW RESONANCE CHROMA
R/T/P SW : REC/TRICK/PB SWITCH CONTROL
REC ACC : AUTOMATIC COLOR CONTROL AMPLIFIER FOR REC
REC C : REC CHROMA SIGNAL
REC OUT AMP : REC SIGNAL OUTPUT AMPLIFIER
ROTARY SW : ROTATION SWITCH CONTROL
SUB BM BP : SUB BALANCED MODULATOR BYPASS CONTROL
VCO ADJ : 320 fH VCO ADJUST
VCXO : VOLTAGE CONTROLED CRYSTAL OSCILLATOR

OUTPUT

ACC : AUTOMATIC COLOR CONTROL AMPLIFITER
BGP : BURST GATE PULSE
COMB DRIVE : COMB DRIVE
HP : HORIZONTAL PULSE
P/B DET : PILOT BURST DETECTTION
PB OUT AMP : PB SIGNAL OUTPUT AMPLIFIER
REC LOW C : REC LOW RESONANCE CHROMA
S/L DET : SIDE LOCK DETECTION
SUB BM : SUB BALANCED MODULATOR
SW1 : SWITCH 1
SW2 : SWITCH 2
VCXO 1 : BUFFERED VCXO
VCXO 2 : VOLTAGE CONTROLED CRYSTAL OSCILLATOR

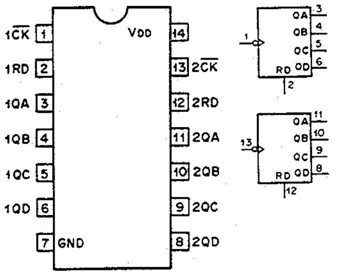
OTHER

B ACC F : AUTOMATIC COLOR CONTROL FILTER FOR BURST
B ERR DET HPF : BURST ERROR DETECT HIGH-PASS FILTER
C ACC F : AUTOMATIC COLOR CONTROL FILTER FOR CHROMA
KILLER F : COLOR KILLER FILTER
KILLER REF : COLOR KILLER REFERENCE FILTER
MMV TIM : MONOSTABLE MULTIVIBRATOR TIMING TIME CONSTANT
P/B DET F : PILOT BURST DETECTION FILTER
PB APC F : AUTOMATIC FREQUENCY CONTROL FILTER FOR PB
REC AFC F : AUTOMATIC FREQUENCY CONTROL FILTER FOR REC
REC APC F : AUTOMATIC PHASE CONTROL FILTER FOR REC


MMV TIM 40
HSS 39
MMV
DIGITAL MMV
46 BGP
42 HP
FSI
ROTARY
SUB BM
41 SUB BM
11 SUB BM BP
ROTARY SW 3
PB APC F 32
B ERR DET HPF 27
B ADJ 26
BURST ERROR DET. ADJ.
PAL SW
+
AFC DET
S/L DET
31 S/L DET
25 REC AFC F
SENSE
SENSE
APC DET (PB)
R
P
320 fH VCO
23 VCO ADJ
VCXO 37
VCXO2 35
VCXO
BUFFER
34 VCXO1
REC OFF
90°
38 P/B DET F
REC APC F 33
APC DET (REC)
APC PC
COMPOSITE COMPONENT DET
43 P/B DET
KILLER REF 53
KILLER F 55
KILLER DET
6dB
6dB
P/S/N SW 21
2/4/6 SW 47
R/T/P SW 48
CPS/CPN/VHS SW 50
BURST DOWN
P1 P2 R
4dB AMP
54 COMB DRIVE
S
COMB AMP 52
COMB AMP
N/P
PB OUT AMP KILLER PILOT BURST ERASE
45 PB OUT AMP
R2
R1
P
REC ACC 20
PB ACC 18
ACC AMP
7 ACC
B ACC F 24
C ACC F 19
ACC DET
10dB/6dB
P
R
PILOT BURST INSERT
ACC 8
PHASE SELECT
0°
180°
PILOT BURST GENERATOR
4 P/B P ADJ
30 P/B APC F
PB LOW C 13
PB AMP
P
SW1
12 SW1
MAIN BM 2
MAIN BM
BURST UP
R
MAIN BM BP 5
REC C 10
P
R
SW2
6 SW2
REC OUT AMP 14
REC OUT AMP KILLER SW
15 REC LOW C

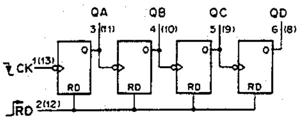
SN74HC393ANS (TI) FLAT PACKAGE

C-MOS DUAL 4-BIT BINARY COUNTER
– TOP VIEW –


1CK 1
1RD 2
1QA 3
1QB 4
1QC 5
1QD 6
7 GND
VDD 14
13 2CK
12 2RD
11 2QA
10 2QB
9 2QC
8 2QD
1
QA 3
QB 4
QC 5
RD QD 6
2
13
QA 11
QB 10
QC 9
RD QD 8
12

COUNT SEQUENCE

COUNT	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1


QA
QB
QC
QD
3 (11)
4 (10)
5 (9)
6 (8)
CK 1(13)
Q
RD
RD 2(12)

RESET/COUNT FUNCTION

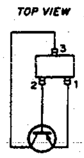
RD	QD	QC	QB	QA
1	0	0	0	0
0	COUNT			

0; LOW LEVEL
1; HIGH LEVEL

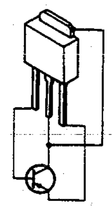
NOTE :

TYPE	VDD
74AC	+2 to 5.5V
74HC	+2 to 6V

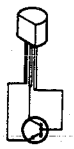
TRANSISTOR


TOP VIEW
3
2
1

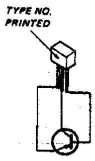
2SA1162
2SA812



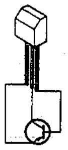
2SB1204



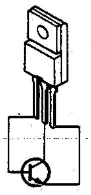
2SC1815
2SC2878


TYPE NO. PRINTED

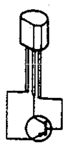
2SA1175



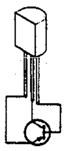
2SB733



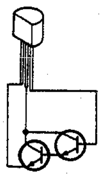
2SC4558



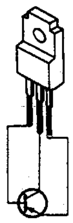
2SA1319



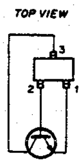
2SB739



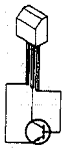
2SD1111



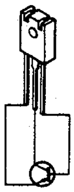
2SA1441
2SB1370


TOP VIEW
3
2
1

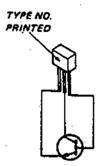
2SC1623
2SC2712
2SC2715
2SC3326N
2SC3735



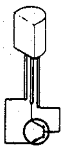
2SD774



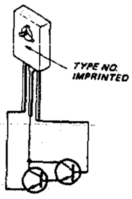
2SB1142


TYPE NO. PRINTED

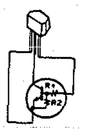
2SC2785



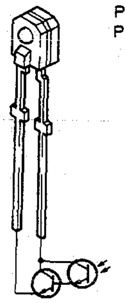
2SD788


TYPE NO.
IMPRINTED

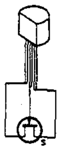
2SD894



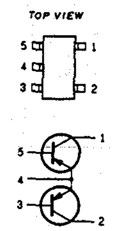
DTC144ES (R1 = 47K, R2 = 47K)



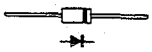
PT483F1
PT483F1S



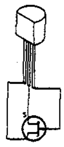
2SK105A


TOP VIEW
5
1
4
3
2
1
5
4
3
2

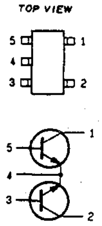
FMS1FE



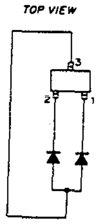
10E2
1SS119



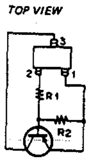
2SK523


TOP VIEW
5
1
4
3
2
1
5
4
3
2

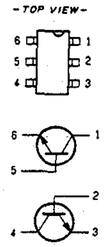
FMW1


TOP VIEW
3
2
1

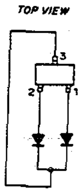
1S2835
1S2836


TOP VIEW
3
2
1
R1
R2

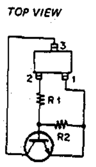
DTA144EK (R1 = 47K, R2 = 47K)
DTB143EK (R1 = 4.7K, R2 = 4.7K)


- TOP VIEW -
6
1
5
2
4
3
6
1
5
2
4
3

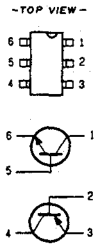
IMX1


TOP VIEW
3
2
1

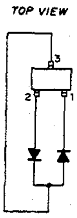
1S2837
MA152WK


TOP VIEW
3
2
1
R1
R2

DTC114YK (R1 = 10K, R2 = 47K)
DTC124EK (R1 = 22K, R2 = 22K)
DTC144EK (R1 = 47K, R2 = 47K)

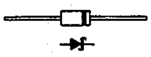

- TOP VIEW -
6
1
5
2
4
3
6
1
5
2
4
3

IMZ1

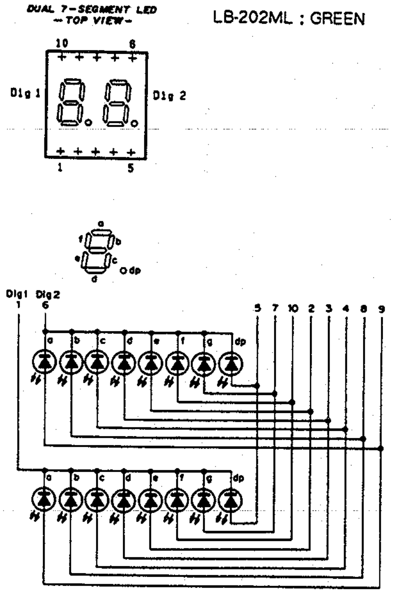

TOP VIEW
3
2
1

1SS123
1SS226

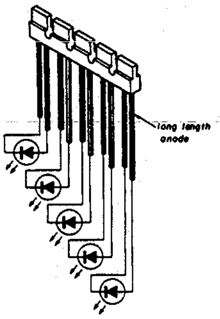
DIODE, PHOTO-COUPLER



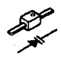
1SS99
ERB81-004
ERC81-004


DUAL 7-SEGMENT LED
—TOP VIEW—
10
6
Dig 1
Dig 2
1
5
a
b
c
d
e
f
g
dp
Dig1 Dig2
1 6
5 7 10 2 3 4 8 9

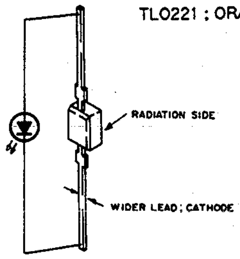
LB-202ML ; GREEN


long length anode

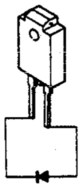
SLJ-165MG5HLF ; GREEN



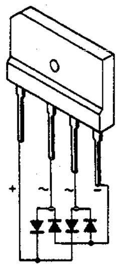
1T32
1T33C


RADIATION SIDE
WIDER LEAD ; CATHODE

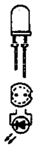
TLO221 ; ORANGE



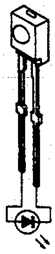
ERC62M-004



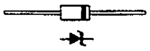
RBV-602



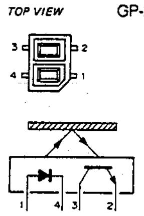
TLUG154 ; GREEN



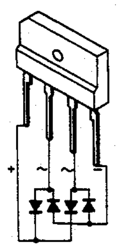
GL451V ; INFRARED
GL451VS1 ; INFRARED



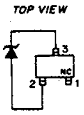
RD ? ?ESB ?
RD ? ?FB ?


TOP VIEW
3
2
4
1
1
4
3
2

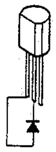
GP-2S09



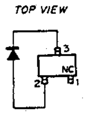
RBA-406B


TOP VIEW
3
NC
2
1

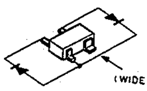
RD ? ?M-B ?
UZM ? ?X



SB05-05NP


TOP VIEW
3
NC
2
1

SB05-05CP



ND411G-2

SECTION 13
BOARD LAYOUTS AND SCHEMATIC DIAGRAMS

BOARD INDEX

	Board Name [Board No. Suffix]	Board Layout Page	Schematic Diagram Page
A	AC-131 (for J model)	13-112	13-113
	AC-131A (for UC model)	13-112	
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	AU-161 [13]	13-66 and 13-68	13-69 to 13-71
	[11] (note 1 : *A, *B)	13-72 and 13-74	13-75 to 13-77
C	CM-14	13-116	13-85, 13-97, 13-116
	CN-633	13-114	13-114
	CP-183	13-114	13-115
	CR-38 [14]	13-9 and 13-11	13-6 to 13-8
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	[11] (note 1 : *A)	13-21 and 13-23	13-18 to 13-20
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	[11] (note 1 : *A, *B)	13-112	
	DP-165	13-107	13-106
	DR-153 (a)	13-111	13-111
	DR-153 (b)		
	DR-167	13-108	13-108
	DR-176 [12]	13-109	13-109
	[11] (note 1 : *A)	13-109	
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	DUS-445 [12]	13-87	13-87
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	DUS-529 (note 2)	no entry	13-111
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	SE-159	13-110	13-110
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	[11] (note 1 : *A, *B)	13-94 and 13-96	13-97 to 13-105
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	[11] (note 1 : *A, *B)	13-58 and 13-60	13-61 to 13-65

FRAME DIAGRAM 13-116

Note 1 :

Mark	Serial No.		
	SVO-9500MD (J)	SVO-9500MD (UC)	SVO-9500MD4 (UC)
*A	10001 to 10310	10001 to 11220	——
*B	——	11221 to 11620	——
*C	——	20001 to 21200	10001 to 12220
*D	20001 to 20050	——	——
*E	20051 to 20150	——	——

Note 2 : DUS-529基板は，次のセットの SS-49基板上に存在します。
The DUS-529 board is attached on the SS-49 board having the follows.
SVO-9500MD (J)......S/N 10031 to 10310
SVO-9500MD (UC)....S/N 10021 to 10560, 10562, 10563, 10567, 10568, 10573, 10575, 10576, 10577, 10582, 10583, 10593, 10594, 10631, 10633, 10639, 10642, 10651, 10652, 10653, 10654, 10657, 10661, 10662, 10664, 10665, 10666, 10666, 10668, 10669, 10670, 10673, 10675, 10677, 10679, 10681, 10685, 10686, 10687, 10688, 10690, 10692, 10694, 10695, 10697, 10698, 10701, 10704, 10705, 10706, 10708, 10710, 10711, 10712, 10715, 10716, and 10720

Note 3 : 次のセットには，DUS-534基板が SS-49基板上にありません。
The DUS-534 board is not attached on the SS-49 board having the follows.
SVO-9500MD (J)......S/N 10001 to 10310
SVO-9500MD (UC)....S/N 10001 to 11620

Note 4 : この章の各波形写真は，測定点（ロケーション）と動作モードが記載されています。
(このときのロケーションは，基板上の位置を示しています。)
The mentioned items at waveform photograph of this section are measurement point (location on board) and machine operation mode.

CIRCUIT FUNCTION OF THE PRINTED CIRCUIT BOARD

System	Board Name	Circuit Function
VIDEO	CR-38	Chroma Process (1/2) Chroma Processor, Crosstalk Canceller (2/2) Chroma Process Improvement (CPI)
	VM-12	Y/Chroma Noise Reducer, Video Memory, Chroma Decoder/Encorder (1/5) Y/Chroma A-D Converters, Chroma Decoder, Y/Chroma Noise Reducer (2/5) SYNC Separator, VD/HD Pulse Generator (3/5) Y/Chroma Field Memories (4/5) Memory Write/Read Timing Control (5/5) Y Enhancer, Chroma Encorder, Y/Chroma D-A Converters
	VO-37	Y Process, Video Output Process (1/3) Y Process (2/3) Digital Y/C Separator, PB Y/C Output (3/3) YX Filter, Y/C Mix, Video/S-Video Output
	RP-62	Video & AFM Head Amp.
AUDIO	AH-28	Audio/Erase/CTL Head
	AU-161	AFM Process, Normal Audio Process (1/2) AFM Process (2/2) Normal Audio Process
SERVO • SYSTEM CONTROL	CM-14	Cassette Compartment Motor
	DP-165	Counter Display
	DR-153 (a)	T-Reel Driver
	DR-153 (b)	S-Reel Driver
	DR-167	Cam Mode Detect, Drum Motor Driver
	DR-176	Capstan FG Amp., Capstan Motor Driver
	DUS-445	Reel Direction and Stop Detect
	DUS-529*1	Capstan FG Detect
	DUS-534*2	VISS Control, CTL Head Amp.
	DUS-544	Capacitor for T-Brake Solenoid
	KY-219	Function Key/LED/Switch, REMOCON Interface (include DP-165 board)
	HN-160	Connection
	LD-35	Loading Motor
	LE-80	Tape Top/End LED
	LE-86	Tension Regulator LED
	SE-151	Tape End Sensor
	SE-152	Tape Top Sensor
	SE-159	Tension Regulator CDS Detect
	SS-49	Servo & System Control (include DUS-445, DUS-529*1, and DUS-534*2 boards) (1/5) Drum/Capstan Servo Control, Back-up Power Block, Video/Audio System Control (2/5) Reel Servo Control, Solenoid Control (3/5) Video/Audio System Control, Dew Sense Detect, CNR/Video Memories/Indicate Interface (4/5) VISS Control, CTL Head Amp. (5/5) Capstan FG Amp., Power Block
POWER	AC-131	AC Input for J Model
	AC-131A	AC Input for UC Model
	DC-53	AC-DC Power Regulator
CONNECTOR	CN-633	Connection of Front Connector
	CP-183	Connection of Rear Connector (include DUS-442 board)
	DUS-442	Connection of Indicate Connector

* 1 ; See left note 2.
* 2 ; See left note 3.

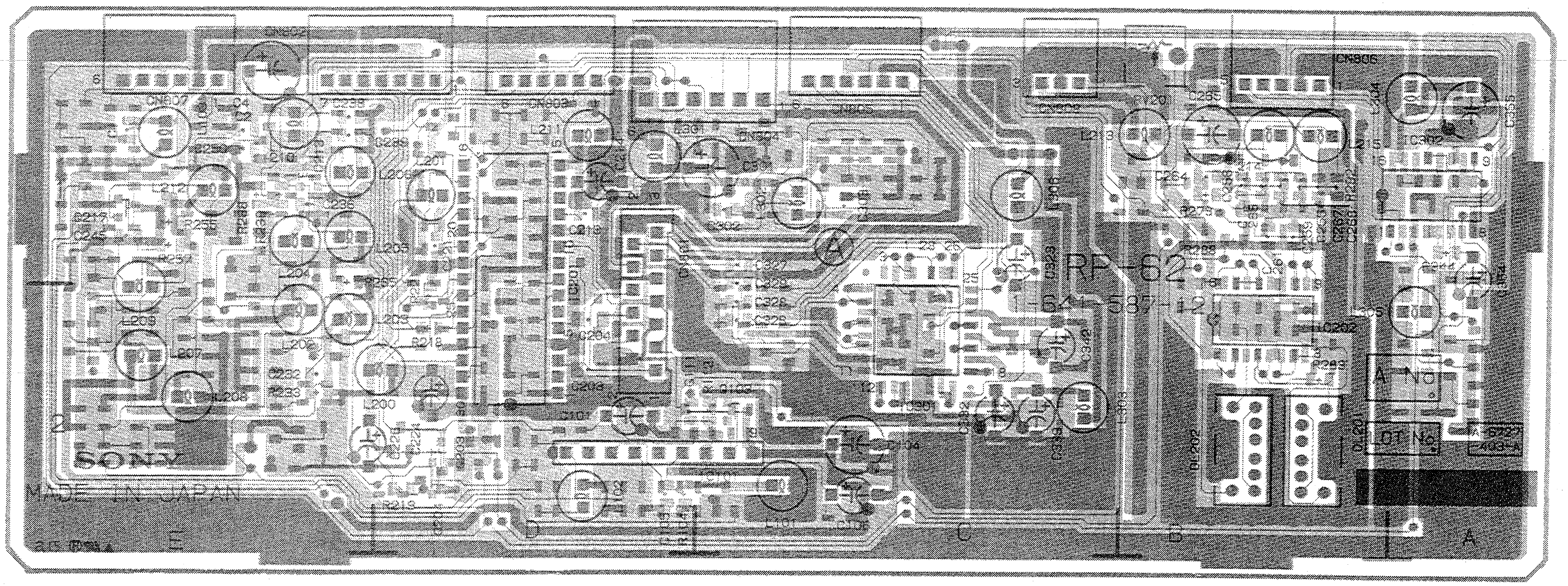
RP-62 ; VIDEO & AFM HEAD AMP.

SVO-9500MD (J)	: Serial No. 20001 to 20050
SVO-9500MD (UC)	: Serial No. 20001 to 21200
SVO-9500MD4 (UC)	: Serial No. 10001 to 12200

RP-62 (1-641-587-12)

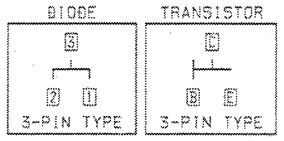
CN801	D-1
CN802	E-1
CN803	D-1
CN804	C-1
CN805	C-1
CN806	B-1
CN807	E-1
CN808	C-1
DL201	B-2
DL202	B-2
D201	D-1 *
D202	E-2 *
D203	E-1 *
D301	C-2 *
IC101	C-2
IC201	D-2
IC202	B-2
IC301	C-2
IC302	A-1
Q101	D-2 *
Q102	C-2 *
Q103	C-2
Q104	E-1 *
Q105	E-1 *
Q201	D-2 *
Q202	D-2 *
Q203	D-2
Q204	D-2
Q210	E-2 *
Q211	E-1 *
Q212	E-2 *
Q213	E-1
Q214	E-2 *
Q215	E-1 *
Q216	E-2 *
Q217	E-1
Q218	E-1 *
Q219	E-1 *
Q220	D-2 *
Q221	B-1 *
Q222	B-1 *
Q223	C-1 *
Q301	C-1 *
Q302	C-1 *
Q303	C-1 *
Q304	C-2 *
Q310	B-2 *
Q311	A-1 *
Q312	A-2 *
Q313	A-2 *
Q314	A-2 *
Q315	B-1 *
RV201	B-1

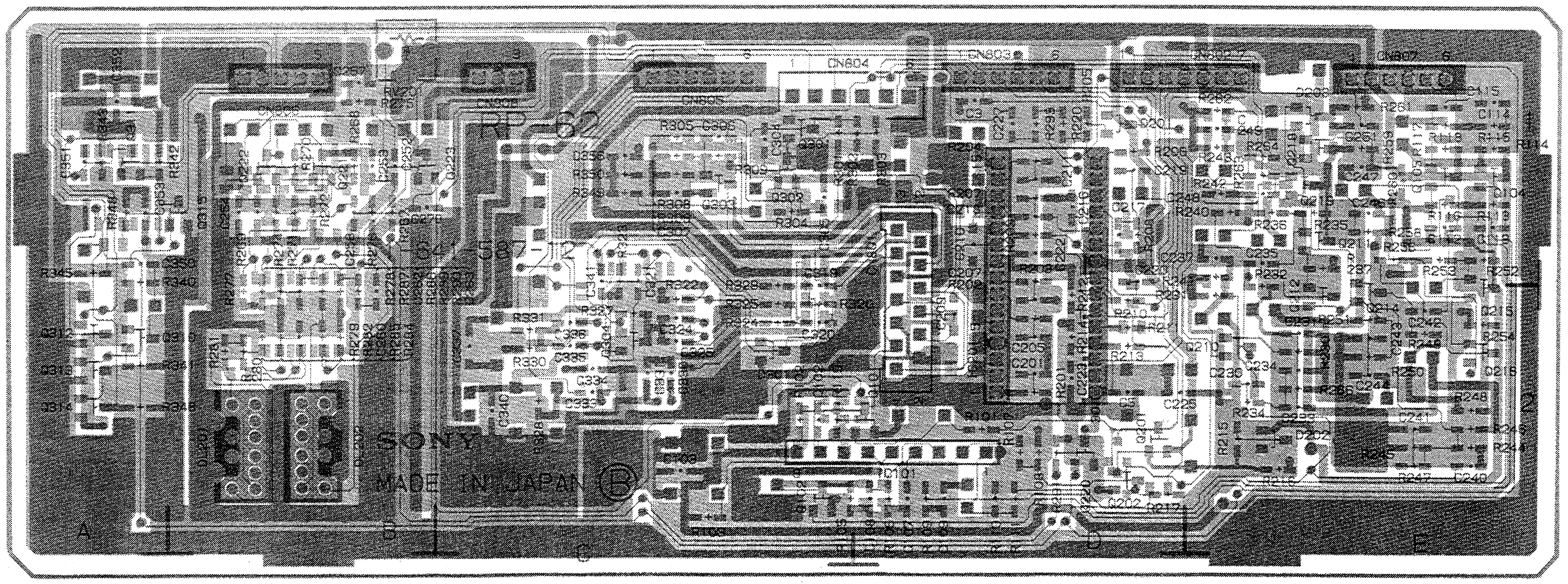
* mark ; B SIDE mount


RP-62
SONY
MADE IN JAPAN
A
B
C
D
E

RP-62/A – A SIDE –
1-641-587-12 (1)
SVO-9500MD
SVO-9500MD4
SVO-9500MDP

SURFACE MOUNT TYPE
DIODE/TRANSISTOR PIN LAYOUTS


DIODE
TRANSISTOR
3
2
1
C
B
E
3-PIN TYPE
3-PIN TYPE


RP-62
SONY
MADE IN JAPAN
A
B
C
D
E

RP-62/A – B SIDE –
1-641-587-12 (1)
SVO-9500MD
SVO-9500MD4
SVO-9500MDP

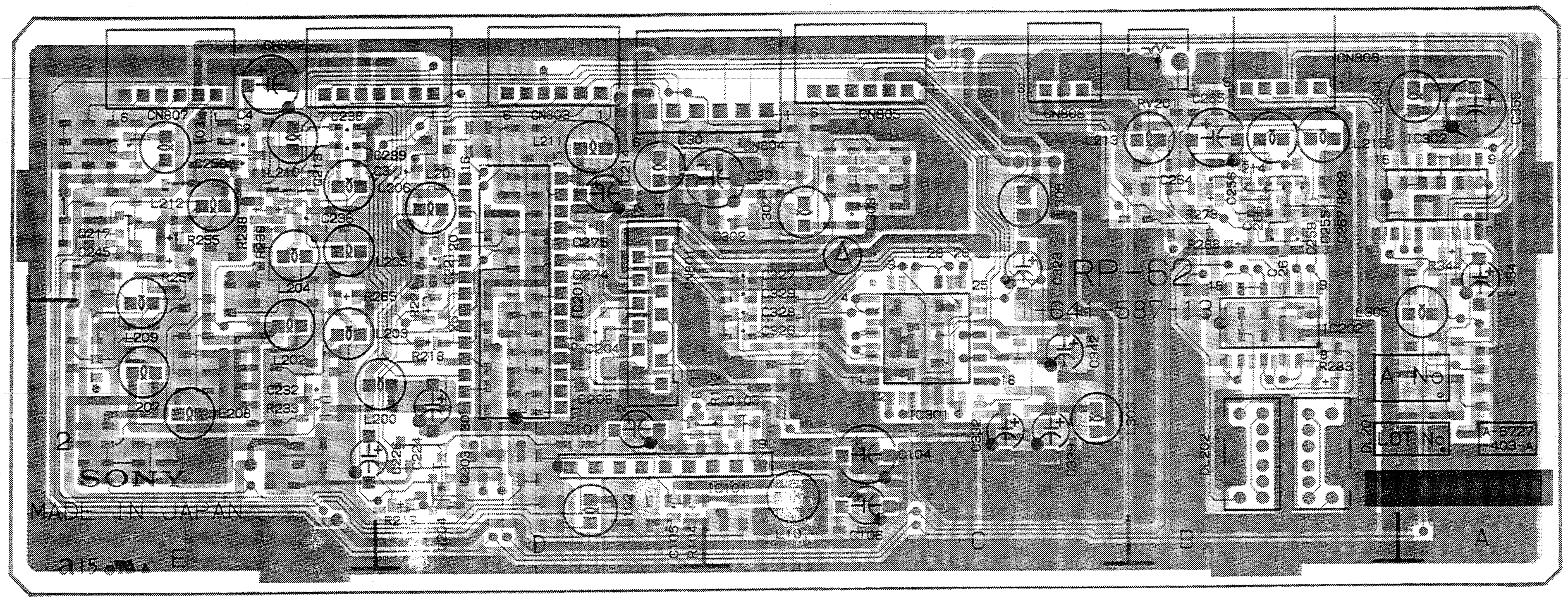
P-62 ; VIDEO & AFM HEAD AMP.

SVO-9500MD (J)	:	Serial No. 20050 and higher
SVO-9500MD (UC)	:	Serial No. 21201 and higher
SVO-9500MD4 (UC)	:	Serial No. 12201 and higher

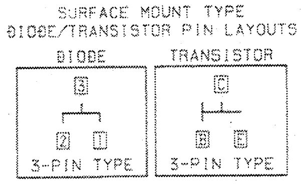
RP-62 (1-641-587-13)

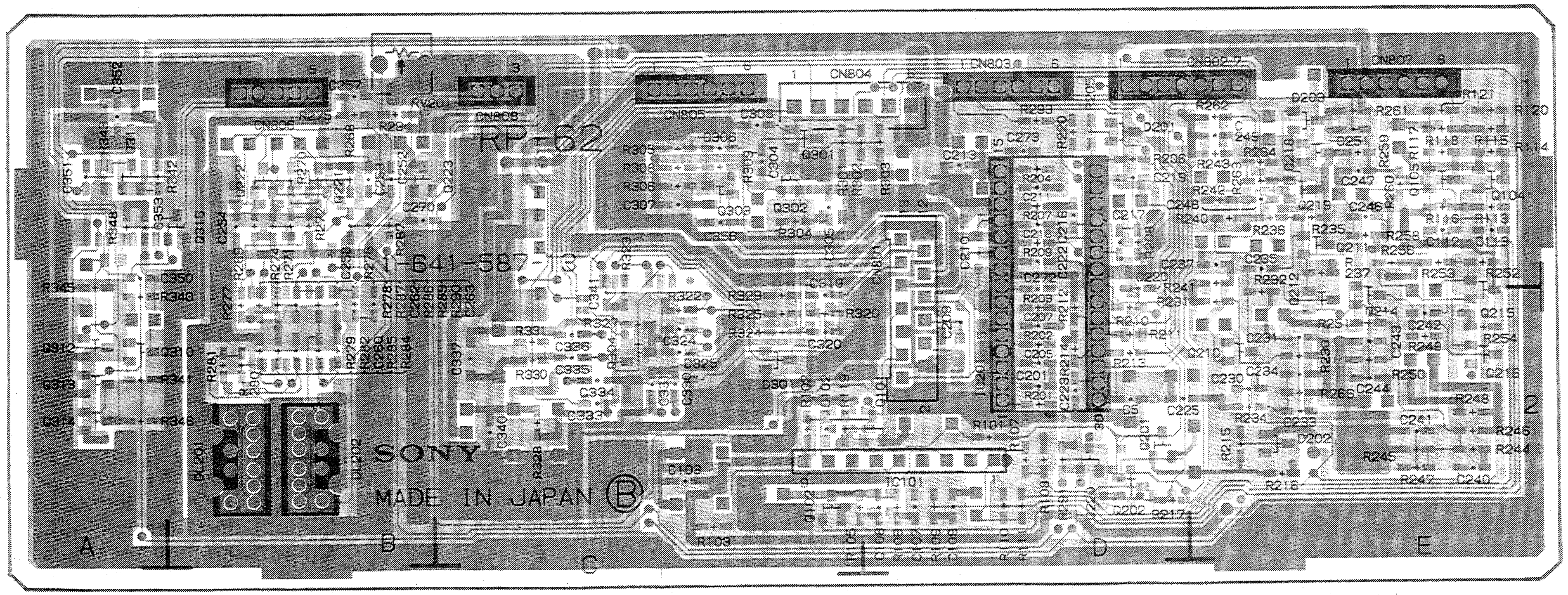
CN801	D-1	
CN802	E-1	
CN803	D-1	
CN804	C-1	
CN805	C-1	
CN806	B-1	
CN807	E-1	
CN808	C-1	
DL201	B-2	
DL202	B-2	
D201	D-1	*
D202	E-2	*
D203	E-1	*
D301	C-2	*
IC101	C-2	
IC201	D-2	
IC202	B-2	
IC301	C-2	
IC302	A-1	
Q101	D-2	*
Q102	C-2	*
Q103	C-2	
Q104	E-1	*
Q105	E-1	*
Q201	D-2	*
Q202	D-2	*
Q203	D-2	
Q204	D-2	
Q210	E-2	*
Q211	E-1	*
Q212	E-2	*
Q213	E-1	
Q214	E-2	*
Q215	E-1	*
Q216	E-2	*
Q217	E-1	
Q218	E-1	*
Q219	E-1	*
Q220	D-2	*
Q221	B-1	*
Q222	B-1	*
Q223	C-1	*
Q301	C-1	*
Q302	C-1	*
Q303	C-1	*
Q304	C-2	*
Q310	B-2	*
Q311	A-1	*
Q312	A-2	*
Q313	A-2	*
Q314	A-2	*
Q315	B-1	*
RV201	B-1	

* mark ; B SIDE mount


RP-62
1-641-587-13
SONY
MADE IN JAPAN
A
B
C
D
E

RP-62/A — A SIDE —
1-641-587-13 (1)
SVO-9500MD
SVO-9500MD4
SVO-9500MDP

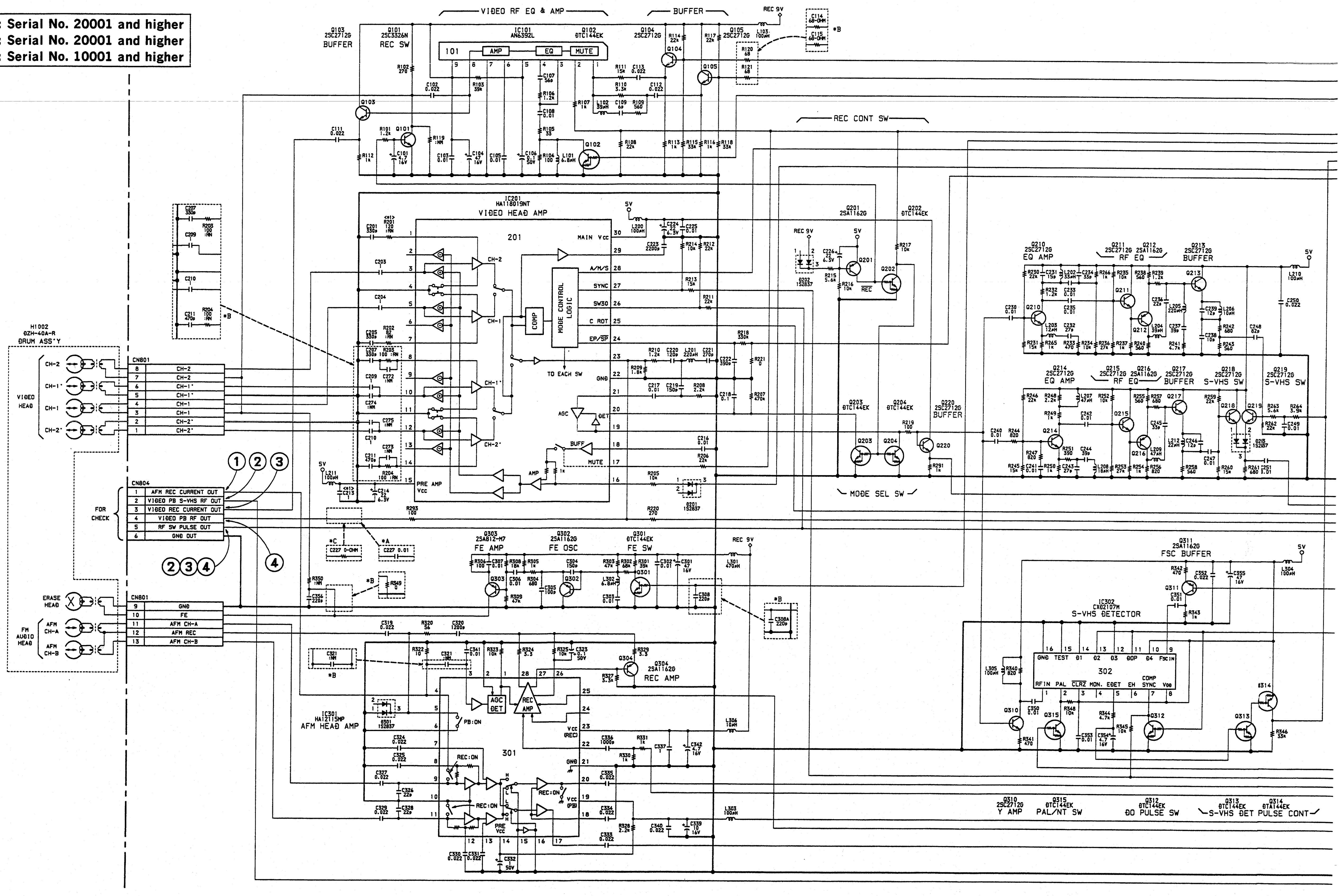

SURFACE MOUNT TYPE
DIODE/TRANSISTOR PIN LAYOUTS
DIODE
TRANSISTOR
3
2
1
C
B
E
3-PIN TYPE
3-PIN TYPE

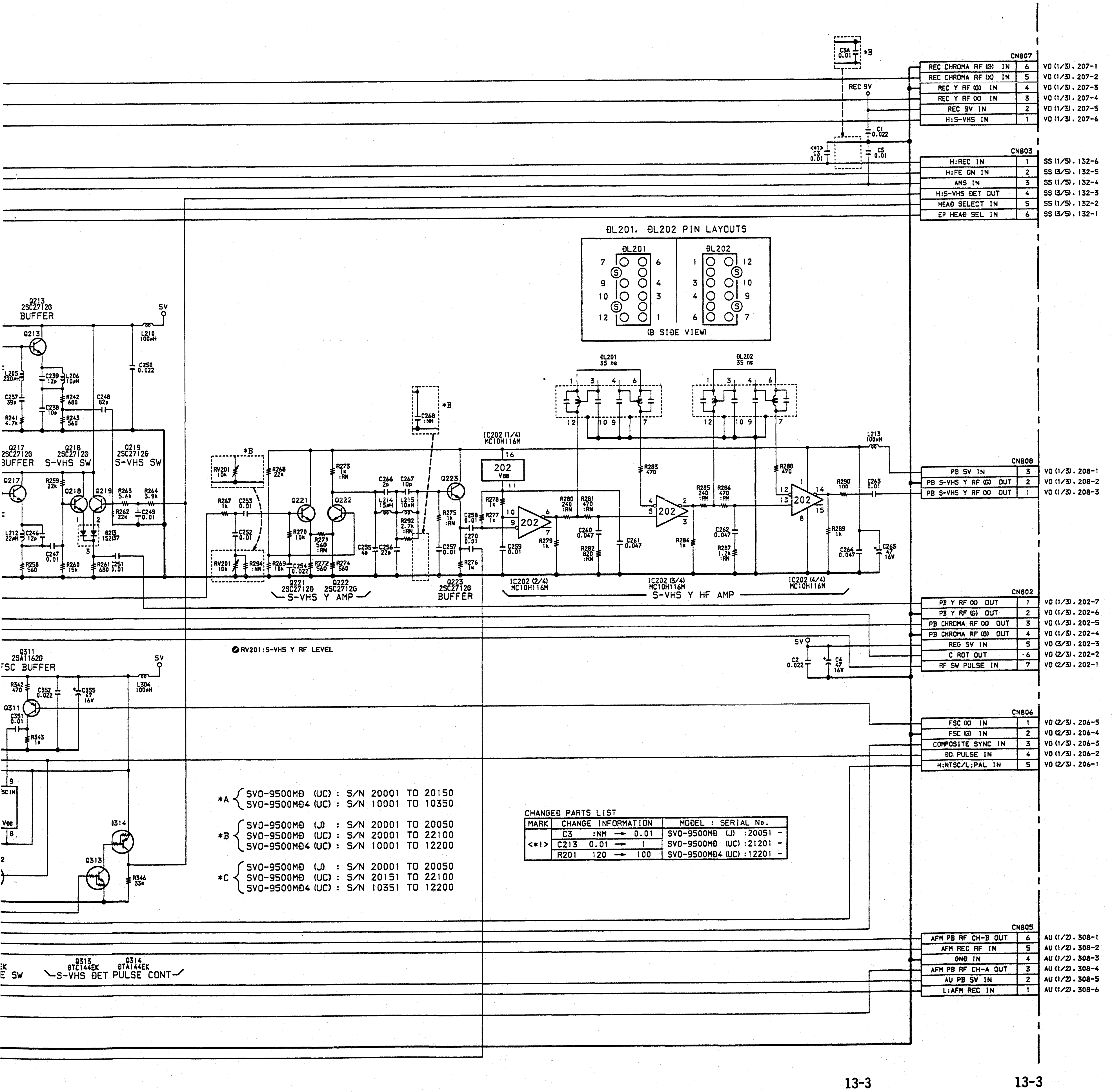

RP-62
1-641-587-13
SONY
MADE IN JAPAN
A
B
C
D
E

RP-62/A — B SIDE —
1-641-587-13 (1)
SVO-9500MD
SVO-9500MD4
SVO-9500MDP

RP-62; VIDEO & AFM HEAD AMP.

SVO-9500MD (J) : Serial No. 20001 and higher
SVO-9500MD (UC) : Serial No. 20001 and higher
SVO-9500MD4 (UC) : Serial No. 10001 and higher


VIDEO RF EQ & AMP
BUFFER
REC 9V
Q103 2SC2712G BUFFER
Q101 2SC3326N REC SW
IC101 AN6392L
Q102 DTC144EK
Q104 2SC2712G
Q105 2SC2712G
101
AMP
EQ
MUTE
REC CONT SW
IC201 HA11801SNT VIDEO HEAD AMP
201
MAIN Vcc
A/M/S
SYNC
SW30
C ROT
EP/SP
GND
AGC
DET
BUFF
MUTE
AMP
COMP
MODE CONTROL LOGIC
TO EACH SW
PRE AMP Vcc
CH-2
CH-1
CH-1'
CH-2'
H1002 DZH-40A-R DRUM ASS'Y
VIDEO HEAD
CN801
CH-2
CH-1'
CH-1
CH-2'
CN804
AFM REC CURRENT OUT
VIDEO PB S-VHS RF OUT
VIDEO REC CURRENT OUT
VIDEO PB RF OUT
RF SW PULSE OUT
GND OUT
FOR CHECK
①②③
④
②③④
ERASE HEAD
FM AUDIO HEAD
AFM CH-A
AFM CH-B
GND
FE
AFM CH-A
AFM REC
AFM CH-B
Q303 2SA812-M7 FE AMP
Q302 2SA1162G FE OSC
Q301 DTC144EK FE SW
Q304 2SA1162G REC AMP
IC301 HA12115NP AFM HEAD AMP
301
AGC DET
REC AMP
PB:ON
REC:ON
Vcc (REC)
Vcc (PB)
PRE Vcc
D301 1SS357
D201 1SS357
D202 1SS357
Q201 2SA1162G
Q202 DTC144EK
REC
Q203 DTC144EK
Q204 DTC144EK
Q220 2SC2712G BUFFER
MODE SEL SW
Q210 2SC2712G EQ AMP
Q211 2SC2712G
Q212 2SA1162G
RF EQ
Q213 2SC2712G BUFFER
Q214 2SC2712G EQ AMP
Q215 2SC2712G
Q216 2SA1162G
RF EQ
Q217 2SC2712G BUFFER
Q218 2SC2712G S-VHS SW
Q219 2SC2712G S-VHS SW
D203 1SS357
5V
Q311 2SA1162G FSC BUFFER
IC302 CXD2107M S-VHS DETECTOR
302
GND TEST D1 D2 D3 DDP D4 FSCIN
RFIN PAL CLRZ MON. EDET EH SYNC VDD
COMP
Q310 2SC2712G Y AMP
Q315 DTC144EK PAL/NT SW
Q312 DTC144EK DD PULSE SW
Q313 DTC144EK
Q314 DTA144EK
S-VHS DET PULSE CONT
*A
*B
*C
C227 0-OHM
C227 0.01


CN807
REC CHROMA RF (G) IN 6 VD (1/3). 207-1
REC CHROMA RF (X) IN 5 VD (1/3). 207-2
REC Y RF (G) IN 4 VD (1/3). 207-3
REC Y RF (X) IN 3 VD (1/3). 207-4
REC 9V IN 2 VD (1/3). 207-5
H:S-VHS IN 1 VD (1/3). 207-6
CN803
H:REC IN 1 SS (1/5). 132-6
H:FE ON IN 2 SS (3/5). 132-5
AMS IN 3 SS (1/5). 132-4
H:S-VHS DET OUT 4 SS (3/5). 132-3
HEAD SELECT IN 5 SS (1/5). 132-2
EP HEAD SEL IN 6 SS (3/5). 132-1
DL201, DL202 PIN LAYOUTS
(B SIDE VIEW)
Q213 2SC2712G BUFFER
Q217 2SC2712G BUFFER
Q218 2SC2712G S-VHS SW
Q219 2SC2712G S-VHS SW
Q221 2SC2712G Q222 2SC2712G S-VHS Y AMP
Q223 2SC2712G BUFFER
IC202 (1/4) MC10H116M
IC202 (2/4) MC10H116M
IC202 (3/4) MC10H116M
IC202 (4/4) MC10H116M
S-VHS Y HF AMP
DL201 35 ns
DL202 35 ns
CN808
PB 5V IN 3 VD (1/3). 208-1
PB S-VHS Y RF (G) OUT 2 VD (1/3). 208-2
PB S-VHS Y RF (X) OUT 1 VD (1/3). 208-3
CN802
PB Y RF (X) OUT 1 VD (1/3). 202-7
PB Y RF (G) OUT 2 VD (1/3). 202-6
PB CHROMA RF (X) OUT 3 VD (1/3). 202-5
PB CHROMA RF (G) OUT 4 VD (1/3). 202-4
REG 5V IN 5 VD (3/3). 202-3
C ROT OUT 6 VD (2/3). 202-2
RF SW PULSE IN 7 VD (2/3). 202-1
RV201: S-VHS Y RF LEVEL
Q311 2SA1162G FSC BUFFER
CN806
FSC (X) IN 1 VD (2/3). 206-5
FSC (G) IN 2 VD (2/3). 206-4
COMPOSITE SYNC IN 3 VD (1/3). 206-3
DD PULSE IN 4 VD (1/3). 206-2
H:NTSC/L:PAL IN 5 VD (2/3). 206-1
Q313 DTC144EK Q314 DTA144EK S-VHS DET PULSE CONT
CN805
AFM PB RF CH-B OUT 6 AU (1/2). 308-1
AFM REC RF IN 5 AU (1/2). 308-2
GND IN 4 AU (1/2). 308-3
AFM PB RF CH-A OUT 3 AU (1/2). 308-4
AU PB 5V IN 2 AU (1/2). 308-5
L:AFM REC IN 1 AU (1/2). 308-6

*A { SVO-9500MD (UC) : S/N 20001 TO 20150
 SVO-9500MD4 (UC) : S/N 10001 TO 10350

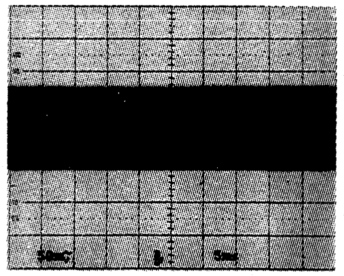
*B { SVO-9500MD (J) : S/N 20001 TO 20050
 SVO-9500MD (UC) : S/N 20001 TO 22100
 SVO-9500MD4 (UC) : S/N 10001 TO 12200

*C { SVO-9500MD (J) : S/N 20001 TO 20050
 SVO-9500MD (UC) : S/N 20151 TO 22100
 SVO-9500MD4 (UC) : S/N 10351 TO 12200

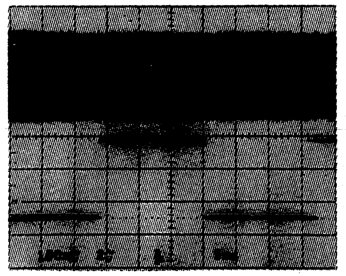
CHANGED PARTS LIST

MARK	CHANGE INFORMATION	MODEL : SERIAL No.
<*1>	C3 :NM → 0.01	SVO-9500MD (J) :20051 -
	C213 0.01 → 1	SVO-9500MD (UC) :21201 -
	R201 120 → 100	SVO-9500MD4 (UC) :12201 -

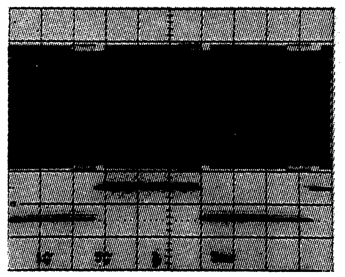
① CN804 pin 1 (C-1) REC mode



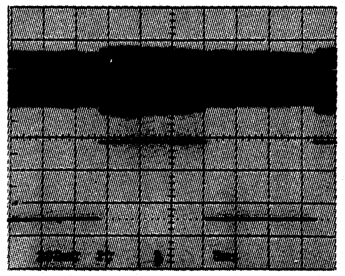
② CN804 pin 2 (C-1) PB mode (S)
CN804 pin 5 (C-1) (TRIG)



③ CN804 pin 3 (C-1) REC mode
CN804 pin 5 (C-1) (TRIG)



④ CN804 pin 4 (C-1) PB mode (N)
CN804 pin 5 (C-1) (TRIG)



Measurement Condition
S-VIDEO IN: SMPTE color bars
REC mode: S-VHS
PB mode (S): KRV-45HNS or KRV-51HN
PB mode (N): KRV-45NS or KRV-51N

RP-62

1-641-587-12 (1)
SVO-9500MD (J) : #20001-
SVO-9500MD (UC) : #20001-
SVO-9500MD4 (UC) : #10001-

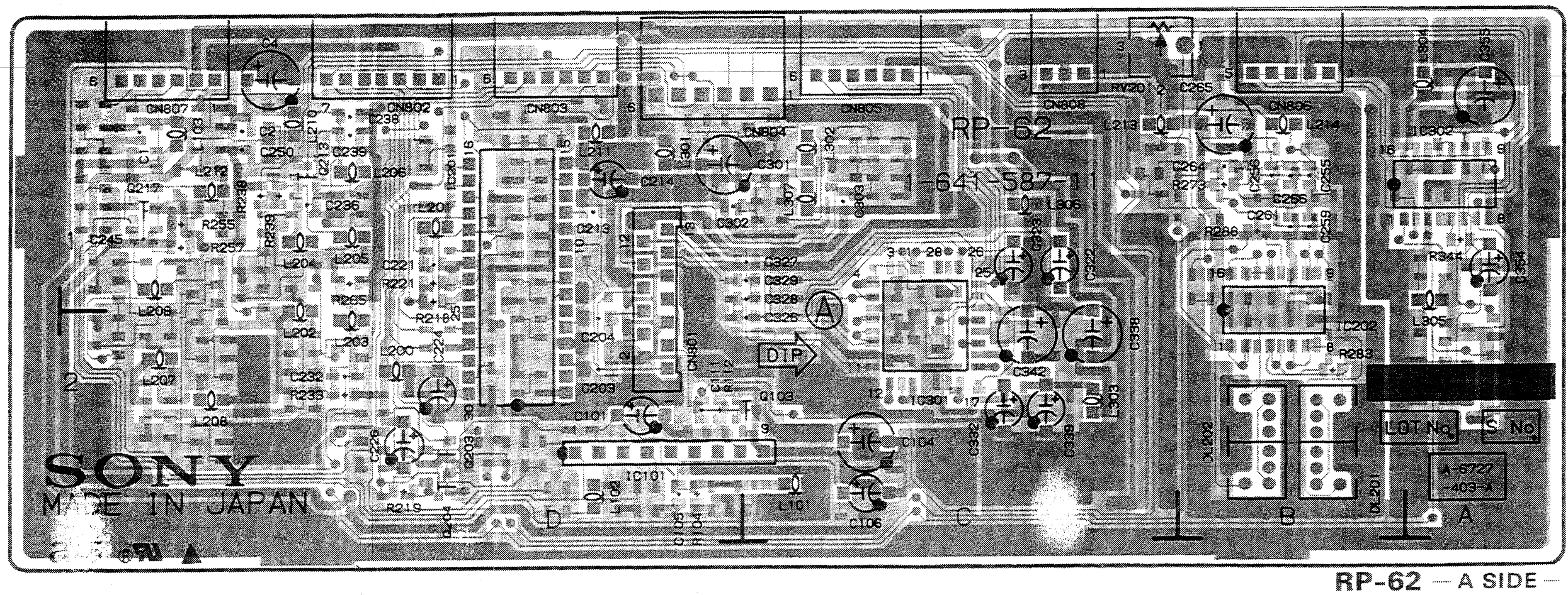
-62 ; VIDEO & AFM HEAD AMP.

VO-9500MD (J) : Serial No. 10001 to 10310
VO-9500MD (UC) : Serial No. 10001 to 11620

RP-62 (1-641-587-11)

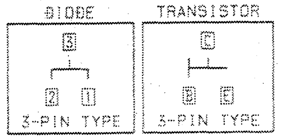
CN801	D-2
CN802	D-1
CN803	D-1
CN804	C-1
CN805	C-1
CN806	B-1
CN807	D-1
CN808	C-1
DL201	B-2
DL202	B-2
D201	D-1 *
D202	D-2 *
D203	D-1 *
D301	C-2 *
IC101	D-2
IC201	D-1
IC202	B-2
IC301	C-2
IC302	A-1
Q101	D-2 *
Q102	C-2 *
Q103	C-2
Q104	D-1 *
Q105	D-1 *
Q201	D-2 *
Q202	D-2 *
Q203	D-2
Q204	D-2
Q210	D-2 *
Q211	D-1 *
Q212	D-2 *
Q213	D-1
Q214	D-1 *
Q215	D-1 *
Q216	D-2 *
Q217	D-1
Q218	D-1 *
Q219	D-1 *
Q220	D-2 *
Q221	B-1 *
Q222	B-1 *
Q223	C-1 *
Q301	C-1 *
Q302	C-1 *
Q303	C-1 *
Q304	C-2 *
Q310	B-2 *
Q311	A-1 *
Q312	A-2 *
Q313	A-2 *
Q314	A-2 *
Q315	B-1 *
RV201	C-1

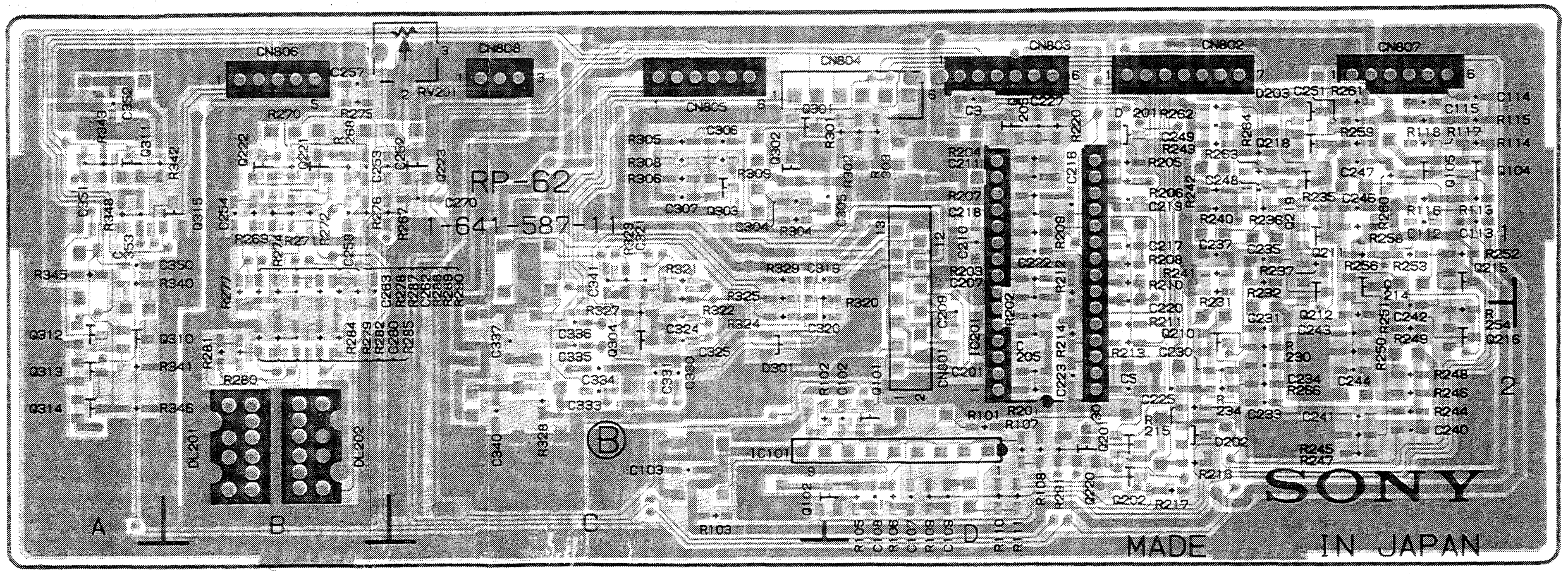
* mark : B SIDE mount


RP-62
1-641-587-11
SONY
MADE IN JAPAN
CN801
CN802
CN803
CN804
CN805
CN806
CN807
CN808
IC101
IC201
IC202
IC301
IC302
DL201
DL202
RV201
DIP
LOT No.
S No.
A
B
C
D
1
2

RP-62 — A SIDE —
1-641-587-11 (1)
SVO-9500MD

SURFACE MOUNT TYPE
DIODE/TRANSISTOR PIN LAYOUTS

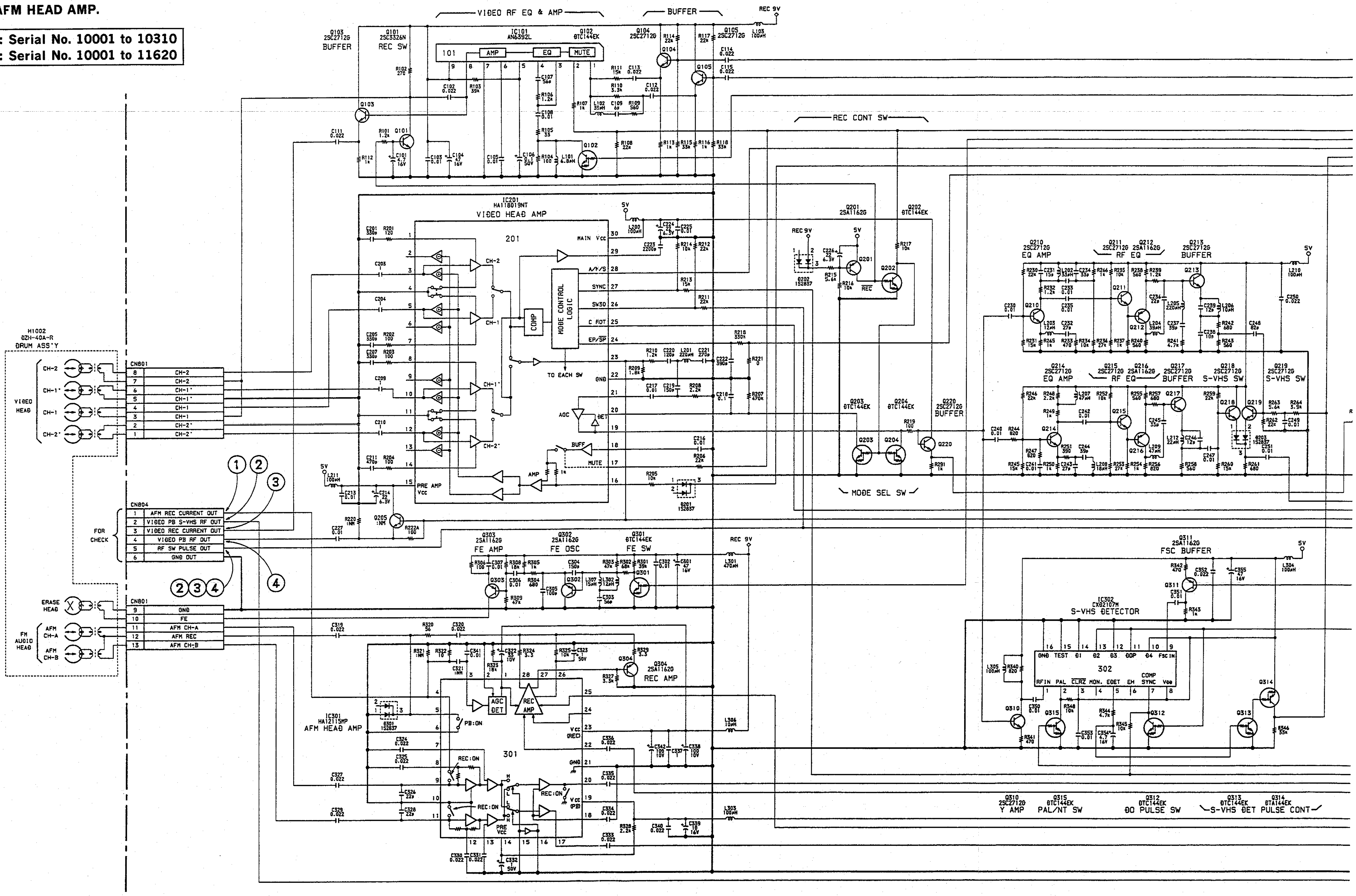

DIODE
TRANSISTOR
3
2
1
C
B
E
3-PIN TYPE
3-PIN TYPE

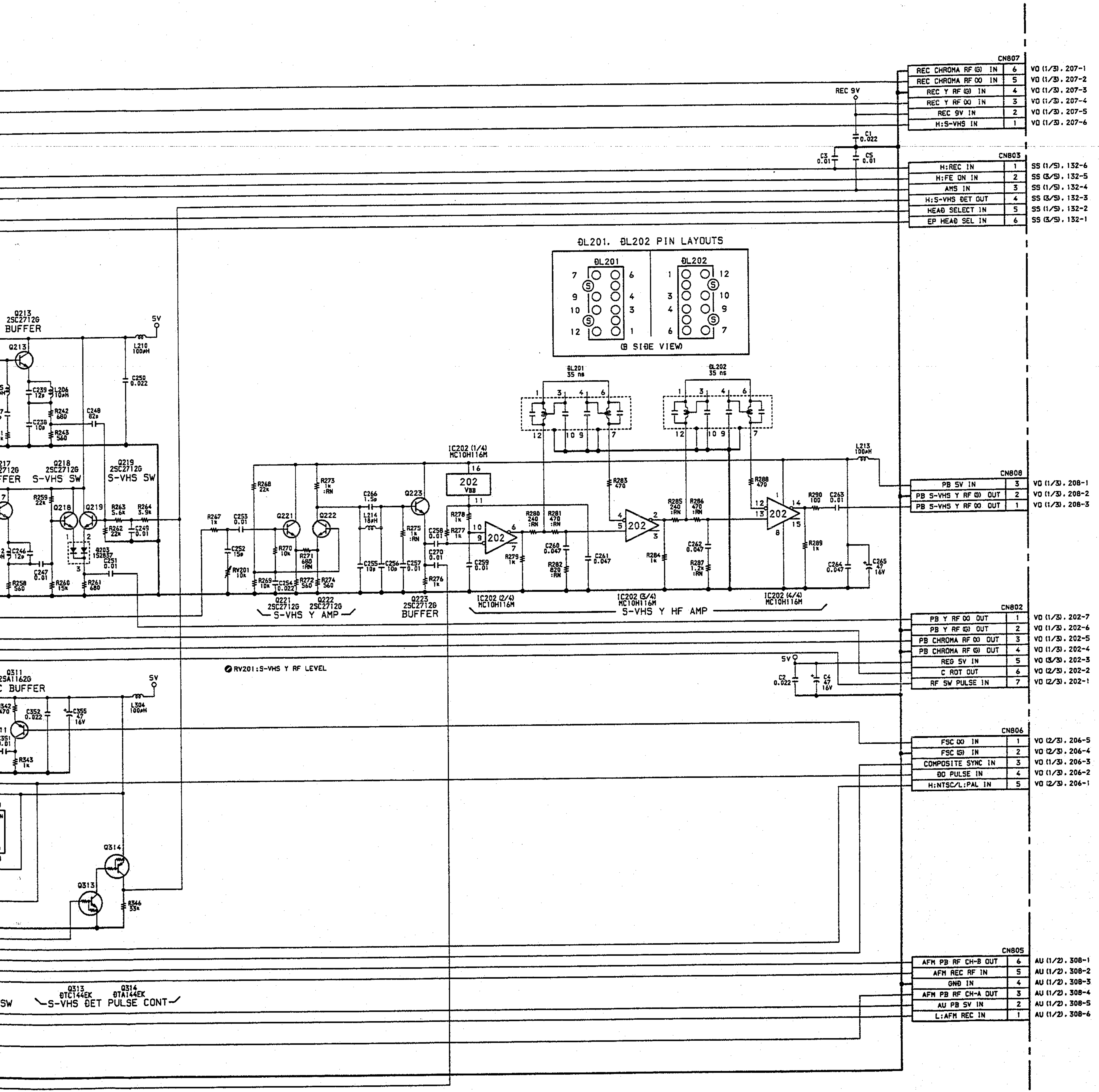

RP-62
1-641-587-11
SONY
MADE IN JAPAN
CN802
CN803
CN804
CN805
CN806
CN807
CN808
IC101
DL201
DL202
RV201
A
B
C
D
1
2

RP-62 — B SIDE —
1-641-587-11 (1)
SVO-9500MD

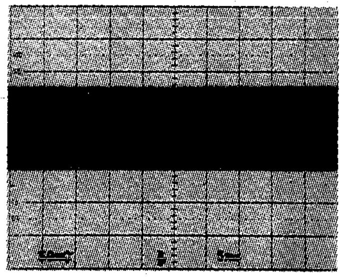
RP-62 ; VIDEO & AFM HEAD AMP.

SVO-9500MD (J) : Serial No. 10001 to 10310
SVO-9500MD (UC) : Serial No. 10001 to 11620

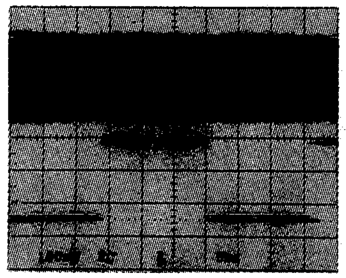

VIDEO RF EQ & AMP
BUFFER
REC 9V
Q103 2SC2712G BUFFER
Q101 2SC3326N REC SW
IC101 AN6392L
Q102 DTC144EK
Q104 2SC2712G
Q105 2SC2712G
101
AMP
EQ
MUTE
REC CONT SW
IC201 HA11801 9NT
VIDEO HEAD AMP
201
MAIN Vcc
A/P/S
SYNC
SW30
C ROT
EP/SP
GND
MODE CONTROL LOGIC
COMP
CH-2
CH-1
CH-1'
CH-2'
TO EACH SW
AGC
DET
BUFF
MUTE
AMP
PRE AMP Vcc
Q201 2SA1162G
Q202 DTC144EK
Q203 DTC144EK
Q204 DTC144EK
Q220 2SC2712G BUFFER
MODE SEL SW
D201 1SS357
D202 1SS357
REC
Q210 2SC2712G EQ AMP
Q211 2SC2712G
Q212 2SA1162G
RF EQ
Q213 2SC2712G BUFFER
Q214 2SC2712G EQ AMP
Q215 2SC2712G
Q216 2SA1162G
RF EQ
Q217 2SC2712G BUFFER
Q218 2SC2712G S-VHS SW
Q219 2SC2712G S-VHS SW
D203 1SS357
5V
H1002 DZH-40A-R DRUM ASS'Y
VIDEO HEAD
CH-2
CH-1'
CH-1
CH-2'
CN801
CH-2
CH-2
CH-1'
CH-1'
CH-1
CH-1
CH-2'
CH-2'
FOR CHECK
CN804
1 AFM REC CURRENT OUT
2 VIDEO PB S-VHS RF OUT
3 VIDEO REC CURRENT OUT
4 VIDEO PB RF OUT
5 RF SW PULSE OUT
6 GND OUT
①
②
③
④
②③④
Q205 :NM
ERASE HEAD
FM AUDIO HEAD
AFM CH-A
AFM CH-B
CN801
9 GND
10 FE
11 AFM CH-A
12 AFM REC
13 AFM CH-B
Q303 2SA1162G FE AMP
Q302 2SA1162G FE OSC
Q301 DTC144EK FE SW
REC 9V
IC301 HA12115MP
AFM HEAD AMP
301
AGC DET
REC AMP
PB:ON
REC:ON
Vcc (REC)
Vcc (PB)
PRE Vcc
GND
D301 1SS357
Q304 2SA1162G REC AMP
Q311 2SA1162G FSC BUFFER
IC302 CX02107M
S-VHS DETECTOR
302
GND TEST D1 D2 D3 DOP D4 FSC IN
RFIN PAL CLRZ MON. EDET EM COMP SYNC VDD
Q310 2SC2712G Y AMP
Q315 DTC144EK PAL/NT SW
Q312 DTC144EK D0 PULSE SW
Q313 DTC144EK
Q314 DTA144EK
S-VHS DET PULSE CONT
A
B
C
D
E
F
G
H


CN807
REC CHROMA RF (G) IN 6 VO (1/3). 207-1
REC CHROMA RF (X) IN 5 VO (1/3). 207-2
REC Y RF (G) IN 4 VO (1/3). 207-3
REC Y RF (X) IN 3 VO (1/3). 207-4
REC 9V IN 2 VO (1/3). 207-5
H:S-VHS IN 1 VO (1/3). 207-6
REC 9V
C1 0.022
C5 0.01
CN803
H:REC IN 1 SS (1/5). 132-6
H:FE ON IN 2 SS (3/5). 132-5
AMS IN 3 SS (1/5). 132-4
H:S-VHS DET OUT 4 SS (3/5). 132-3
HEAD SELECT IN 5 SS (1/5). 132-2
EP HEAD SEL IN 6 SS (3/5). 132-1
DL201, DL202 PIN LAYOUTS
DL201
DL202
(B SIDE VIEW)
DL201 35 ns
DL202 35 ns
Q213 2SC2712G BUFFER
5V
L210 100μH
C250 0.022
Q219 2SC2712G S-VHS SW
Q218 2SC2712G S-VHS SW
D203 1SS357
RV201 10k
Q221 2SC2712G
Q222 2SC2712G
S-VHS Y AMP
Q223 2SC2712G BUFFER
IC202 (1/4) MC10H116M
202 VBB
IC202 (2/4) MC10H116M
IC202 (3/4) MC10H116M
S-VHS Y HF AMP
IC202 (4/4) MC10H116M
L213 100μH
CN808
PB 5V IN 3 VO (1/3). 208-1
PB S-VHS Y RF (G) OUT 2 VO (1/3). 208-2
PB S-VHS Y RF (X) OUT 1 VO (1/3). 208-3
C265 47 16V
CN802
PB Y RF (X) OUT 1 VO (1/3). 202-7
PB Y RF (G) OUT 2 VO (1/3). 202-6
PB CHROMA RF (X) OUT 3 VO (1/3). 202-5
PB CHROMA RF (G) OUT 4 VO (1/3). 202-4
REG 5V IN 5 VO (3/3). 202-3
C ROT OUT 6 VO (2/3). 202-2
RF SW PULSE IN 7 VO (2/3). 202-1
5V
C2 0.022
C4 47 16V
RV201:S-VHS Y RF LEVEL
Q311 2SA1162G
C BUFFER
L304 100μH
C355 47 16V
CN806
FSC (X) IN 1 VO (2/3). 206-5
FSC (G) IN 2 VO (2/3). 206-4
COMPOSITE SYNC IN 3 VO (1/3). 206-3
DO PULSE IN 4 VO (1/3). 206-2
H:NTSC/L:PAL IN 5 VO (2/3). 206-1
Q314
Q313
R346 33k
CN805
AFM PB RF CH-B OUT 6 AU (1/2). 308-1
AFM REC RF IN 5 AU (1/2). 308-2
GND IN 4 AU (1/2). 308-3
AFM PB RF CH-A OUT 3 AU (1/2). 308-4
AU PB 5V IN 2 AU (1/2). 308-5
L:AFM REC IN 1 AU (1/2). 308-6
Q313 DTC144EK
Q314 DTA144EK
S-VHS DET PULSE CONT
SW

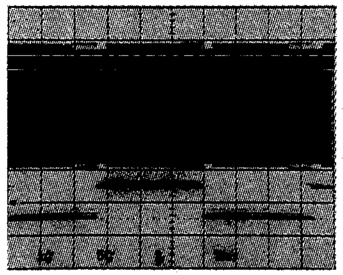
① CN804 pin 1 (C-1) REC mode



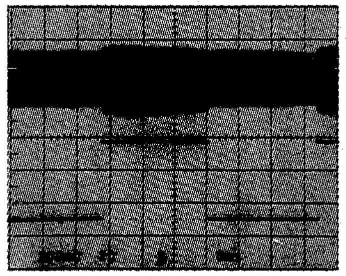
② CN804 pin 2 (C-1) PB mode (S)
CN804 pin 5 (C-1) (TRIG)



③ CN804 pin 3 (C-1) REC mode
CN804 pin 5 (C-1) (TRIG)



④ CN804 pin 4 (C-1) PB mode (N)
CN804 pin 5 (C-1) (TRIG)



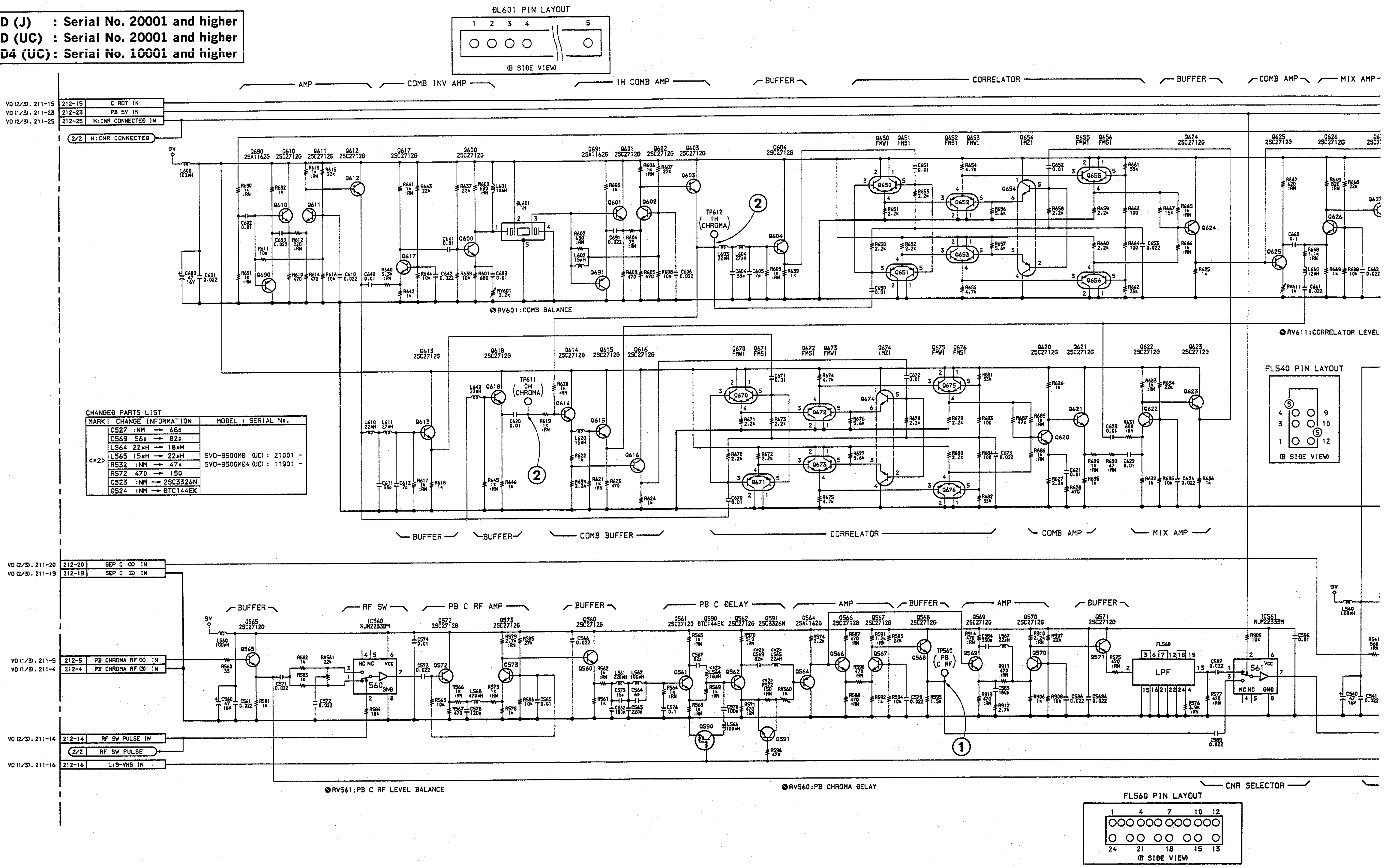
Measurement Condition
S-VIDEO IN: SMPTE color bars
REC mode: S-VHS
PB mode (S): KRV-45HNS or KRV-51HN
PB mode (N): KRV-45NS or KRV-51N

RP-62

1-641-587-11 (2)
SVO-9500MD (J) : #10001-#10310
SVO-9500MD (UC) : #10001-#11620

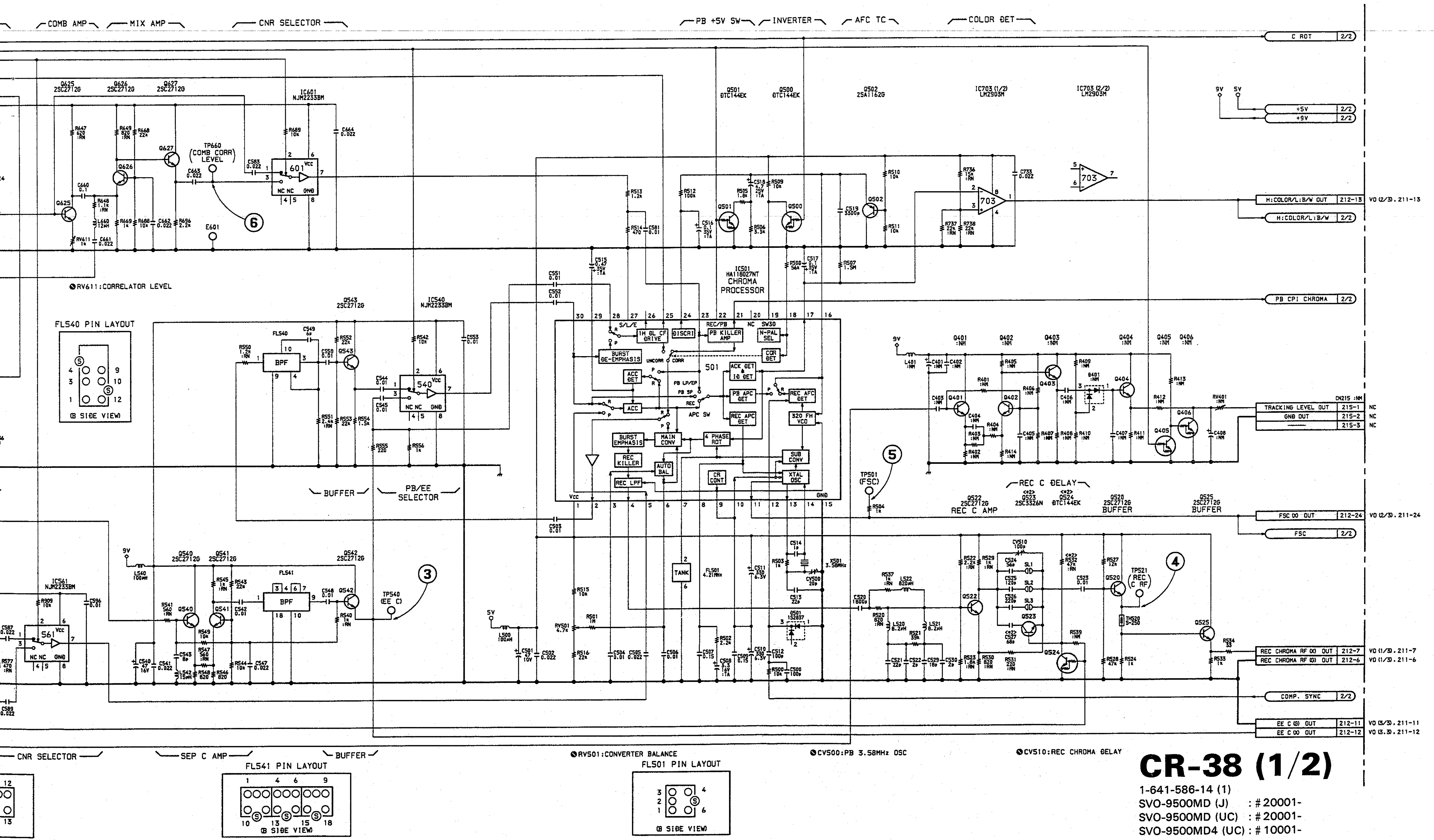
CR-38 (1/2); CHROMA PROCESSOR, CROSSTALK CANCELLER

SVO-9500MD (J) : Serial No. 20001 and higher
SVO-9500MD (UC) : Serial No. 20001 and higher
SVO-9500MD4 (UC) : Serial No. 10001 and higher


DL601 PIN LAYOUT
1 2 3 4 5
(B SIDE VIEW)
AMP
COMB INV AMP
1H COMB AMP
BUFFER
CORRELATOR
BUFFER
COMB AMP
MIX AMP
VD (2/3). 211-15 212-15 C ROT IN
VD (1/3). 211-23 212-23 PB SV IN
VD (2/3). 211-25 212-25 H:CNR CONNECTED IN
2/2 H:CNR CONNECTED
9V
TP612 1H (CHROMA)
RV601:COMB BALANCE
RV611:CORRELATOR LEVEL
TP611 0H (CHROMA)
BUFFER
BUFFER
COMB BUFFER
CORRELATOR
COMB AMP
MIX AMP
FL540 PIN LAYOUT
4 9
3 10
1 12
(B SIDE VIEW)
VD (2/3). 211-20 212-20 SEP C (X) IN
VD (2/3). 211-19 212-19 SEP C (G) IN
BUFFER
RF SW
PB C RF AMP
BUFFER
PB C DELAY
AMP
BUFFER
AMP
BUFFER
VD (1/3). 211-5 212-5 PB CHROMA RF (X) IN
VD (1/3). 211-4 212-4 PB CHROMA RF (G) IN
IC560 NJM2233BM
IC561 NJM2233BM
TP560 (PB C RF)
FL560
LPF
VD (2/3). 211-14 212-14 RF SW PULSE IN
2/2 RF SW PULSE
VD (1/3). 211-16 212-16 L:S-VHS IN
RV561:PB C RF LEVEL BALANCE
RV560:PB CHROMA DELAY
CNR SELECTOR
FL560 PIN LAYOUT
1 4 7 10 12
24 21 18 15 13
(B SIDE VIEW)
①
②
A B C D E F G H

CHANGED PARTS LIST

MARK	CHANGE INFORMATION	MODEL : SERIAL No.
<*2>	C527 :NM → 68p	SVO-9500MD (UC) : 21001 – SVO-9500MD4 (UC) : 11901 –
	C569 56p → 82p	
	L564 22μH → 18μH	
	L565 15μH → 22μH	
	R532 :NM → 47k	
	R572 470 → 150	
	Q523 :NM → 2SC3326N	
	Q524 :NM → DTC144EK	


COMB AMP
MIX AMP
CNR SELECTOR
PB +5V SW
INVERTER
AFC TC
COLOR DET
C ROT
+5V
+9V
H:COLOR/L:B/W OUT
H:COLOR/L:B/W
PB CPI CHROMA
TRACKING LEVEL OUT
GND OUT
FSC OO OUT
FSC
REC CHROMA RF OO OUT
REC CHROMA RF (D) OUT
COMP. SYNC
EE C (D) OUT
EE C OO OUT
Q625 2SC2712G
Q626 2SC2712G
Q627 2SC2712G
IC601 NJM2233BM
TP660 (COMB CORR LEVEL)
E601
RV611:CORRELATOR LEVEL
FL540 PIN LAYOUT
(B SIDE VIEW)
Q543 2SC2712G
IC540 NJM2233BM
BPF
BUFFER
PB/EE SELECTOR
Q501 DTC144EK
Q500 DTC144EK
Q502 2SA1162G
IC703 (1/2) LM2903M
IC703 (2/2) LM2903M
IC501 HA118027NT CHROMA PROCESSOR
1H DL CF DRIVE
DISCRI
PB KILLER AMP
N-PAL SEL
BURST DE-EMPHASIS
ACC DET
ACK DET & ID DET
COR DET
PB APC DET
REC AFC DET
REC APC DET
320 FH VCO
ACC
MAIN CONV
4 PHASE ROT
BURST EMPHASIS
REC KILLER
AUTO BAL
REC LPF
CR CONT
SUB CONV
XTAL OSC
TANK
FL501 4.21MHz
X501 3.58MHz
CV500
Q401 Q402 Q403 Q404 Q405 Q406
RV401
CN215
TP501 (FSC)
REC C DELAY
Q522 2SC2712G REC C AMP
Q523 2SC3326N
Q524 DTC144EK
Q520 2SC2712G BUFFER
Q525 2SC2712G BUFFER
TP521 (REC C RF)
CV510
IC561 NJM2233BM
Q540 2SC2712G
Q541 2SC2712G
Q542 2SC2712G
FL541
TP540 (EE C)
RV501
CNR SELECTOR
SEP C AMP
BUFFER
FL541 PIN LAYOUT
(B SIDE VIEW)
RV501:CONVERTER BALANCE
FL501 PIN LAYOUT
(B SIDE VIEW)
CV500:PB 3.58MHz OSC
CV510:REC CHROMA DELAY
VO (2/3).211-13
VO (2/3).211-24
VO (1/3).211-7
VO (1/3).211-6
VO (3/3).211-11
VO (3/3).211-12
③ ④ ⑤ ⑥

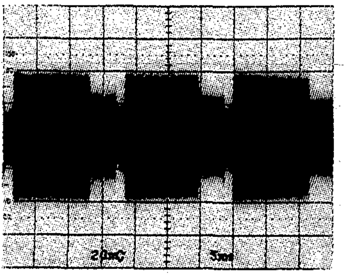
CR-38 (1/2)

1-641-586-14 (1)
SVO-9500MD (J) : #20001-
SVO-9500MD (UC) : #20001-
SVO-9500MD4 (UC) : #10001-

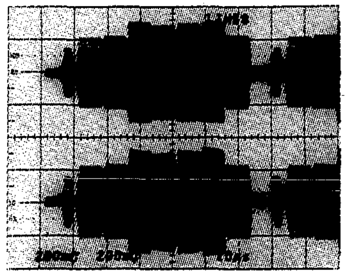
Board Layout....Pages 13-9 and 13-11

CR-38 (1/2)

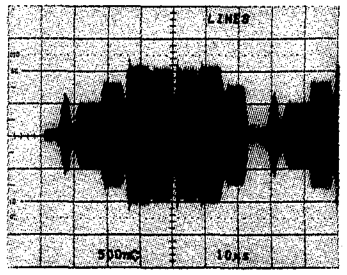
① TP560 (E-3 *) PB mode



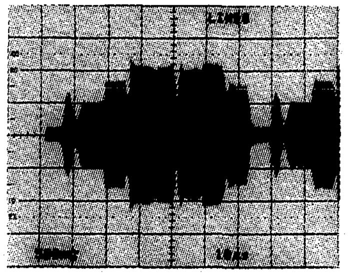
② TP611 (B-3 *)
TP612 (B-3 *) STOP (E-E) mode



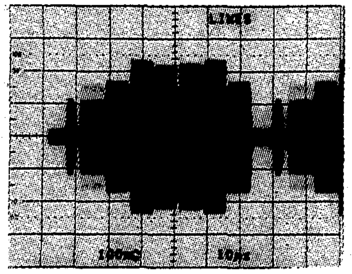
TP611 (B-3 *) PB mode



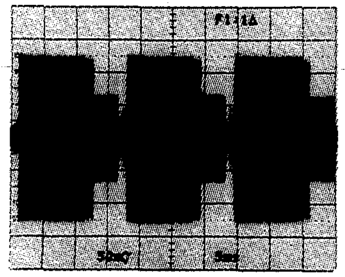
TP612 (B-3 *) PB mode



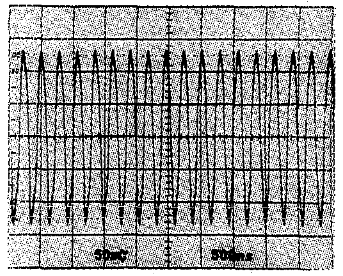
③ TP540 (D-2 *) STOP (E-E) mode



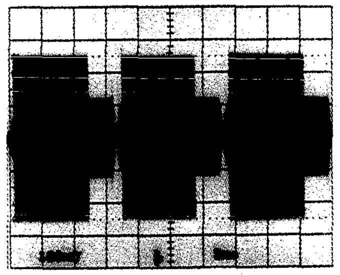
④ TP521 (G-2 *) REC mode



⑤ TP501 (E-3 *) STOP (E-E) mode



⑥ TP660 (A-2 *) PB mode



Measurement Condition
S-VIDEO IN: SMPTE color bars
REC mode: S-VHS
STOP (E-E) mode: S-VHS
PB mode: KRV-45HNS or KRV-51HN

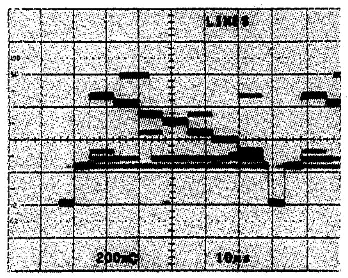
* mark; B SIDE mount

13-7

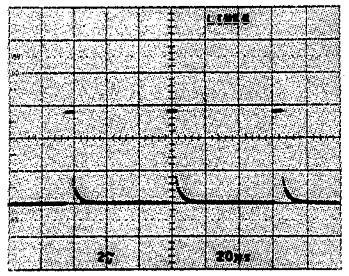
CR-38 (2/2); CHROMA PROCESS IMPROVEMENT (CPI)

SVO-9500MD (J)	**: Serial No. 20001 and higher**
SVO-9500MD (UC)	**: Serial No. 20001 and higher**
SVO-9500MD4 (UC)	**: Serial No. 10001 and higher**

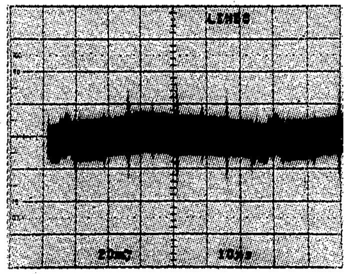
① CN212 pin 18 (G-3) STOP (E-E) mode



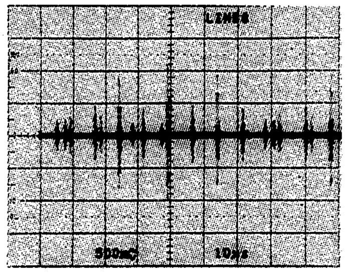
② IC900 pin 4 (G-1) STOP (E-E) mode



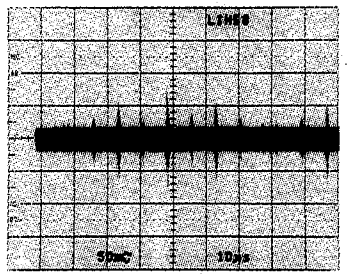
③ TP801 (F-2 *) STOP (E-E) mode



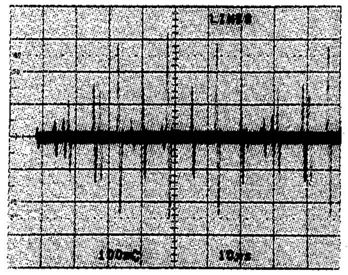
④ TP820 (C-1 *) STOP (E-E) mode



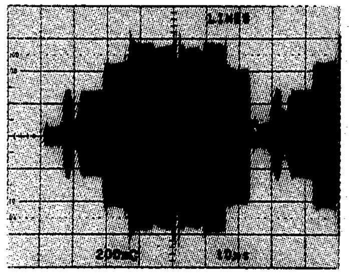
⑤ TP870 (F-1 *) STOP (E-E) mode



⑥ TP850 (E-1 *) STOP (E-E) mode



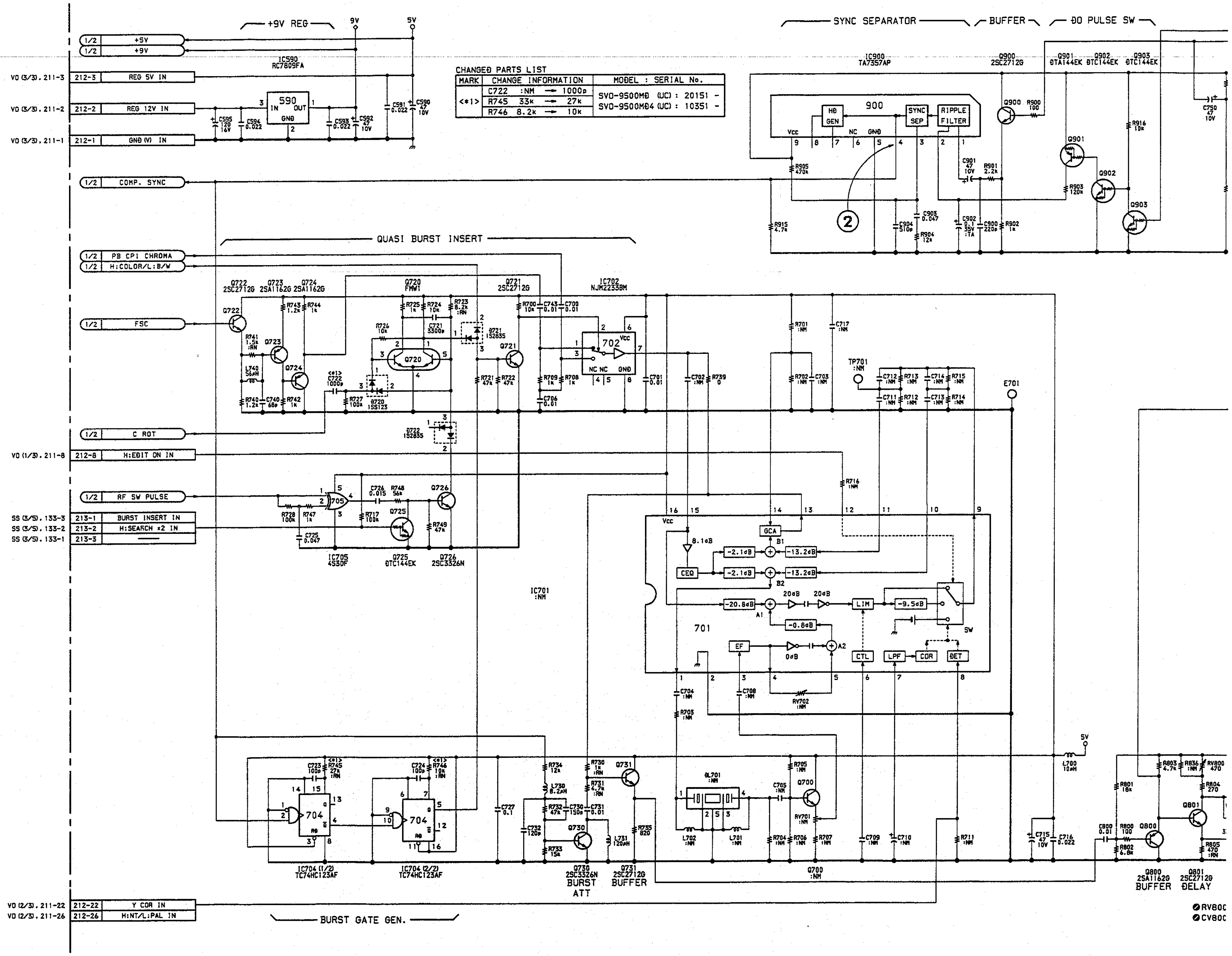
⑦ TP890 (G-2 *) PB mode



Measurement Condition

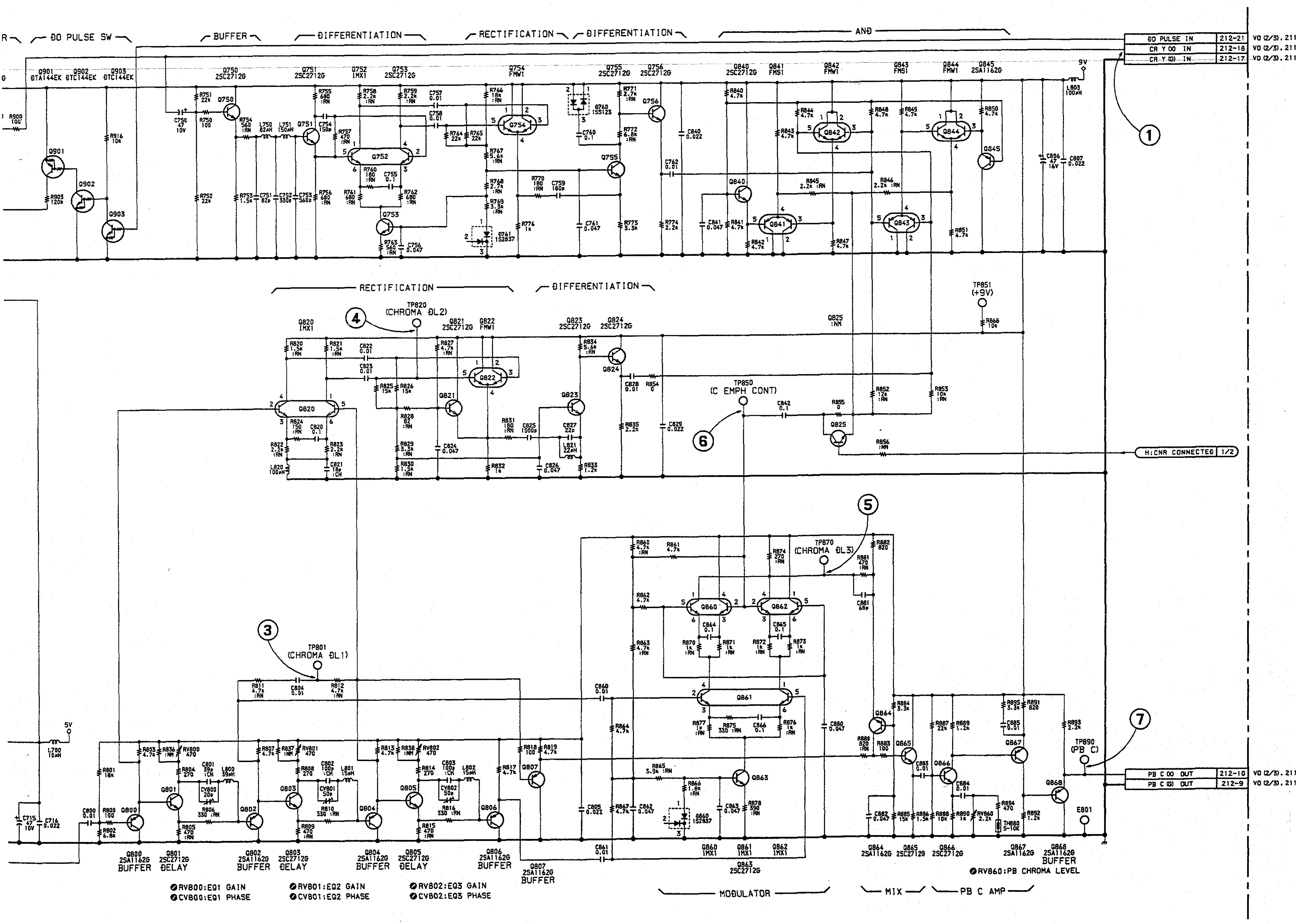
S-VIDEO IN: SMPTE color bars
STOP (E-E) mode: S-VHS
PB mode: KRV-45HNS or KRV-51HN

* mark; B SIDE mount


+9V REG
9V
5V
+5V
+9V
IC590
RC7809FA
590
IN
OUT
GND
REG 5V IN
REG 12V IN
GND (V) IN
COMP. SYNC
VD (3/3). 211-3
VD (3/3). 211-2
VD (3/3). 211-1
212-3
212-2
212-1
SYNC SEPARATOR
BUFFER
90 PULSE SW
IC900
TA7357AP
900
HD GEN
SYNC SEP
RIPPLE FILTER
Q900
2SC2712G
Q901
DTA144EK
Q902
DTC144EK
Q903
DTC144EK
QUASI BURST INSERT
PB CPI CHROMA
H:COLOR/L:B/W
FSC
C ROT
H:EDIT ON IN
RF SW PULSE
BURST INSERT IN
H:SEARCH x2 IN
VD (1/3). 211-8
212-8
SS (3/5). 133-3
SS (3/5). 133-2
SS (3/5). 133-1
213-1
213-2
213-3
Q722
2SC2712G
Q723
2SA1162G
Q724
2SA1162G
Q720
FMW1
Q721
2SC2712G
IC702
NJM2233BM
702
D721
1SS355
D720
1SS123
D722
1SS355
TP701
:NM
E701
IC705
4S50F
705
Q725
DTC144EK
Q726
2SC3326N
IC701
:NM
701
CEQ
GCA
-2.1dB
-13.2dB
-20.8dB
20dB
LIM
-9.5dB
-0.8dB
EF
0dB
CTL
LPF
COR
DET
SW
IC704 (1/2)
TC74HC123AF
IC704 (2/2)
TC74HC123AF
704
Q730
2SC3326N
BURST ATT
Q731
2SC2712G
BUFFER
DL701
Q700
:NM
L700
10μH
Q800
2SA1162G
BUFFER
Q801
2SC2712G
DELAY
BURST GATE GEN.
Y COR IN
H:NT/L:PAL IN
VD (2/3). 211-22
VD (2/3). 211-26
212-22
212-26
②
RV800
CV800

CHANGED PARTS LIST

MARK	CHANGE INFORMATION	MODEL : SERIAL No.
<*1>	C722 :NM → 1000p	SVO-9500MD (UC) : 20151 - SVO-9500MD4 (UC) : 10351 -
	R745 33k → 27k	
	R746 8.2k → 10k	


ΦO PULSE SW
BUFFER
DIFFERENTIATION
RECTIFICATION
DIFFERENTIATION
AND
ΦO PULSE IN 212-21 VO (2/3).211-21
CR Y ΦO IN 212-18 VO (2/3).211-18
CR Y (Φ) IN 212-17 VO (2/3).211-17
9V
①
RECTIFICATION
DIFFERENTIATION
④
TP820 (CHROMA ΦL2)
TP851 (+9V)
TP850 (C EMPH CONT)
⑥
H:CNR CONNECTED 1/2
⑤
TP870 (CHROMA ΦL3)
③
TP801 (CHROMA ΦL1)
⑦
TP890 (PB C)
PB C ΦO OUT 212-10 VO (2/3).211-10
PB C (Φ) OUT 212-9 VO (2/3).211-9
5V
Q800 2SA1162G BUFFER
Q801 2SC2712G DELAY
Q802 2SA1162G BUFFER
Q803 2SC2712G DELAY
Q804 2SA1162G BUFFER
Q805 2SC2712G DELAY
Q806 2SA1162G BUFFER
Q807 2SA1162G BUFFER
Q860 IMX1
Q861 IMX1
Q862 IMX1
Q863 2SC2712G
Q864 2SA1162G
Q865 2SC2712G
Q866 2SC2712G
Q867 2SA1162G
Q868 2SA1162G BUFFER
RV800:EQ1 GAIN
CV800:EQ1 PHASE
RV801:EQ2 GAIN
CV801:EQ2 PHASE
RV802:EQ3 GAIN
CV802:EQ3 PHASE
RV860:PB CHROMA LEVEL
MODULATOR
MIX
PB C AMP

CR-38 (2/2)

1-641-586-14 (1)
SVO-9500MD (J) : #20001-
SVO-9500MD (UC) : #20001-
SVO-9500MD4 (UC) : #10001-

Board Layout....Pages 13-9 and 13-11

CR-38; CHROMA PROCESS

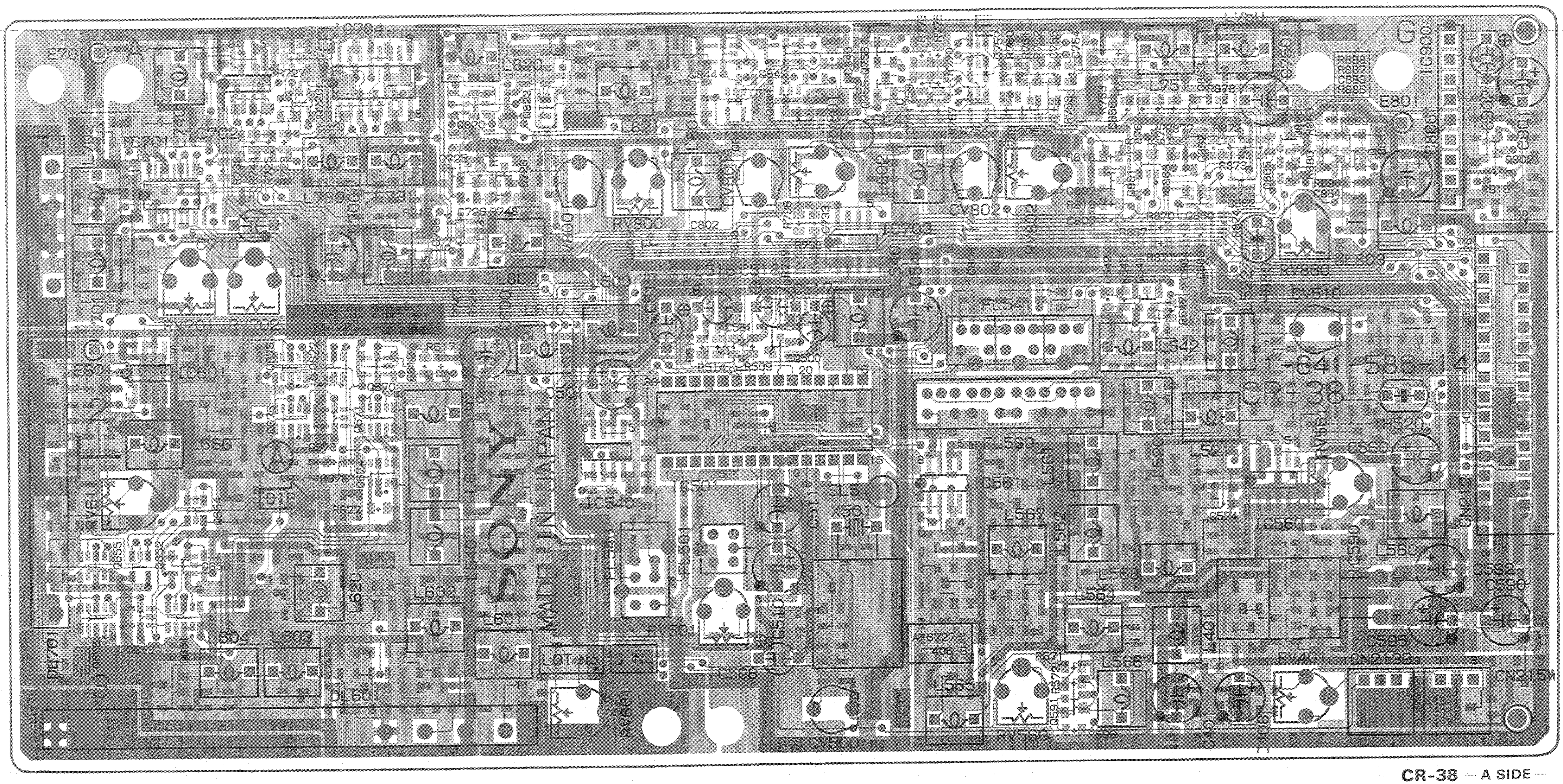
SVO-9500MD (J) : Serial No. 20001 and higher
SVO-9500MD (UC) : Serial No. 20001 and higher
SVO-9500MD4 (UC) : Serial No. 10001 and higher

CR-38 (1-641-586-14)

CN212	G-3	Q604	A-3 *	Q860	F-1
CN213	G-3	Q610	C-2 *	Q861	F-1
		Q611	C-3 *	Q862	F-2
CV500	D-3	Q612	C-3 *	Q863	F-1
CV510	F-2	Q613	C-2 *	Q864	G-1 *
CV800	C-2	Q614	B-2 *	Q865	F-1
CV801	D-1	Q615	B-3 *	Q866	G-1
CV802	E-1	Q616	B-3 *	Q867	G-1 *
		Q617	C-3 *	Q868	G-2
DL601	B-3	Q618	C-3 *	Q900	G-1 *
		Q620	A-2 *	Q901	G-1 *
D501	D-3 *	Q621	A-2 *	Q902	G-1
D720	B-1 *	Q622	B-3 *	Q903	G-1 *
D721	B-1 *	Q623	B-3 *		
D722	D-1 *	Q624	A-3 *	RV501	C-3
D760	E-1 *	Q625	A-3 *	RV560	E-3
D761	E-1 *	Q626	A-3 *	RV561	G-3
D860	F-1 *	Q627	A-2 *	RV601	C-3
		Q650	A-3	RV611	A-3
E601	A-2	Q651	A-3	RV800	C-2
E701	A-1	Q652	A-3	RV801	D-1
E801	G-1	Q653	A-3	RV802	E-2
		Q654	A-3	RV860	F-2
FL501	D-3	Q655	A-3		
FL540	C-3	Q656	A-3	TH520	G-2
FL541	E-2	Q670	B-2	TH880	F-2
FL560	E-2	Q671	B-2		
		Q672	B-2	TP501	E-3 *
IC501	D-3	Q673	B-2	TP521	G-2 *
IC540	C-3	Q674	B-3	TP540	D-2 *
IC560	F-3	Q675	B-2	TP560	E-3 *
IC561	E-3	Q676	B-2	TP611	B-3 *
IC590	G-3	Q690	C-2 *	TP612	B-3 *
IC601	A-2	Q691	C-3 *	TP660	A-2 *
IC702	A-1	Q720	B-1	TP801	F-2 *
IC703	E-2	Q721	B-1 *	TP820	C-1 *
IC704	B-1	Q722	A-1 *	TP850	E-1 *
IC705	C-2	Q723	A-1 *	TP851	G-1 *
IC900	G-1	Q724	B-1 *	TP870	F-1 *
		Q725	C-1	TP890	G-2 *
Q500	D-2	Q726	C-1		
Q501	D-2 *	Q730	B-1 *	X501	D-3
Q502	D-2 *	Q731	B-2 *		
Q520	G-2 *	Q750	F-1 *		
Q522	F-2 *	Q751	E-1 *		
Q525	G-2 *	Q752	E-1		
Q540	F-2 *	Q753	E-1		
Q541	F-2	Q754	E-1		
Q542	E-2 *	Q755	D-1		
Q543	C-3 *	Q756	D-1		
Q560	F-3 *	Q800	C-1 *		
Q561	E-3 *	Q801	C-1 *		
Q562	F-2 *	Q802	C-2 *		
Q564	E-3 *	Q803	C-2		
Q565	G-3 *	Q804	D-1 *		
Q566	E-3 *	Q805	E-1 *		
Q567	E-3 *	Q806	E-2		
Q568	E-3 *	Q807	E-1		
Q569	E-3 *	Q820	C-1		
Q570	E-3 *	Q821	C-1 *		
Q571	E-3 *	Q822	C-1		
Q572	F-3 *	Q823	C-1 *		
Q573	F-3 *	Q824	D-1 *		
Q590	E-3 *	Q840	D-1 *		
Q591	E-3	Q841	D-1		
Q600	C-3 *	Q842	D-1		
Q601	C-3 *	Q843	D-1		
Q602	B-3 *	Q844	D-1		
Q603	B-3 *	Q845	D-1 *		

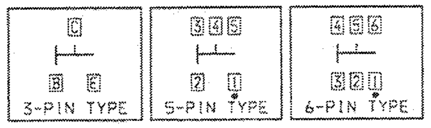
* mark ; *B SIDE mount*

CR-38


IC704
IC701
IC702
L820
RV800
CV802
IC703
RV701
RV702
IC601
IC501
IC540
IC561
IC560
FL541
FL560
X501
RV501
RV601
RV560
RV401
CV510
TH520
CN212
CN213B
CN215W
DL601
DL701
IC900
E801
1-641-586-14
CR-38
SONY
MADE IN JAPAN
LOT No.
S No.

CR-38 — A SIDE —
1-641-586-14 (1)
SVO-9500MD
SVO-9500MD4

SURFACE MOUNT TRANSISTOR PIN LAYOUTS


C
B E
3-PIN TYPE
3 4 5
2 1
5-PIN TYPE
4 5 6
3 2 1
6-PIN TYPE

13-9

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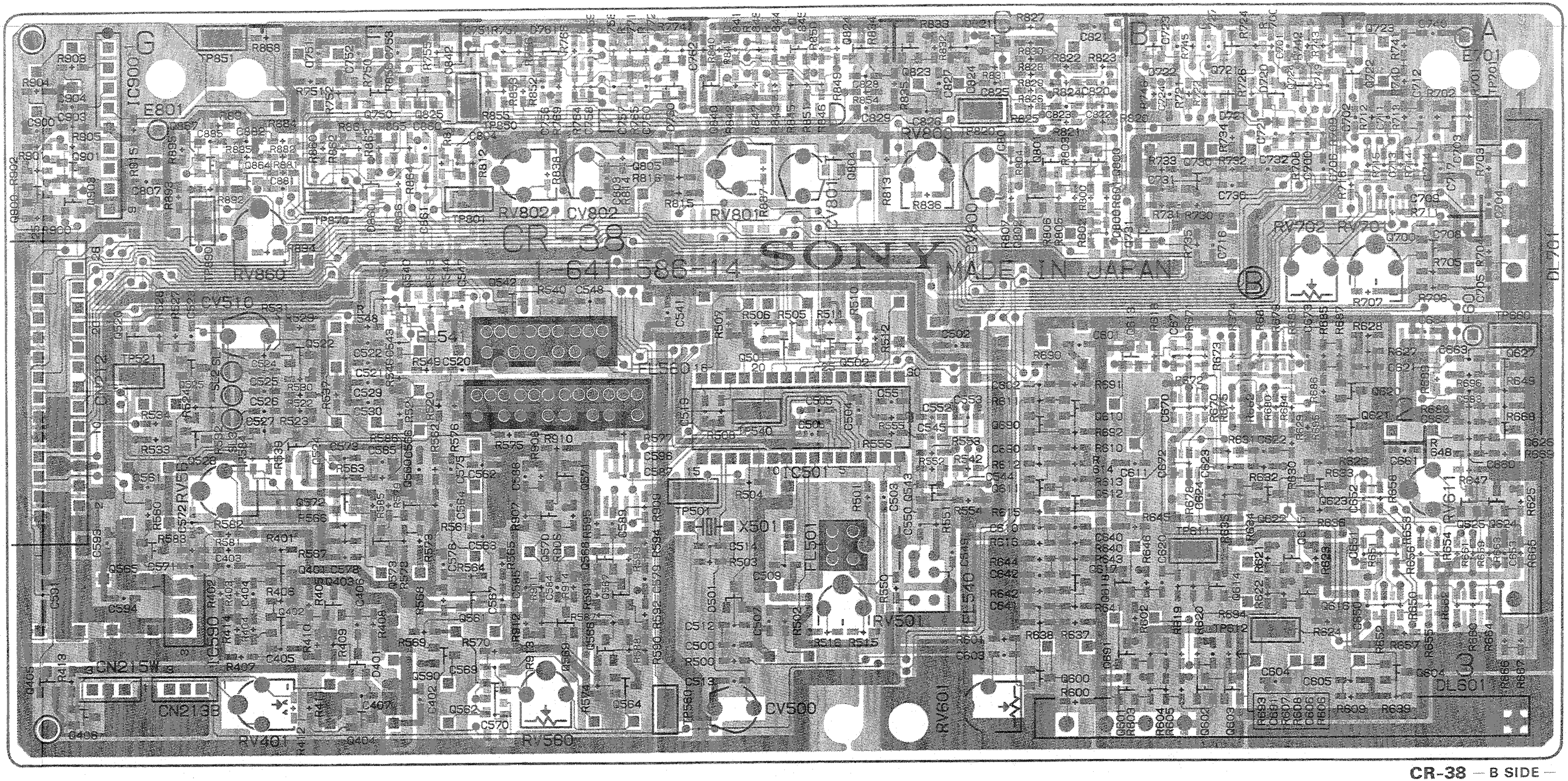
CR-38 ; CHROMA PROCESS

SVO-9500MD (J) : Serial No. 20001 and higher
SVO-9500MD (UC) : Serial No. 20001 and higher
SVO-9500MD4 (UC) : Serial No. 10001 and higher

CR-38 (1-641-586-14)

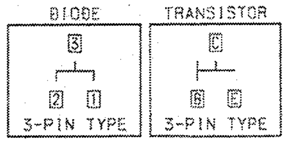
CN212	G-3
CN213	G-3
CV500	D-3
CV510	F-2
CV800	C-2
CV801	D-1
CV802	E-1
DL601	B-3
D501	D-3 *
D720	B-1 *
D721	B-1 *
D722	D-1 *
D760	E-1 *
D761	E-1 *
D860	F-1 *
E601	A-2
E701	A-1
E801	G-1
FL501	D-3
FL540	C-3
FL541	E-2
FL560	E-2
IC501	D-3
IC540	C-3
IC560	F-3
IC561	E-3
IC590	G-3
IC601	A-2
IC702	A-1
IC703	E-2
IC704	B-1
IC705	C-2
IC900	G-1
Q500	D-2
Q501	D-2 *
Q502	D-2 *
Q520	G-2 *
Q522	F-2 *
Q525	G-2 *
Q540	F-2 *
Q541	F-2
Q542	E-2 *
Q543	C-3 *
Q560	F-3 *
Q561	E-3 *
Q562	F-2 *
Q564	E-3 *
Q565	G-3 *
Q566	E-3 *
Q567	E-3 *
Q568	E-3 *
Q569	E-3 *
Q570	E-3 *
Q571	E-3 *
Q572	F-3 *
Q573	F-3 *
Q590	E-3 *
Q591	E-3
Q600	C-3 *
Q601	C-3 *
Q602	B-3 *
Q603	B-3 *
Q604	A-3 *
Q610	C-2 *
Q611	C-3 *
Q612	C-3 *
Q613	C-2 *
Q614	B-2 *
Q615	B-3 *
Q616	B-3 *
Q617	C-3 *
Q618	C-3 *
Q620	A-2 *
Q621	A-2 *
Q622	B-3 *
Q623	B-3 *
Q624	A-3 *
Q625	A-3 *
Q626	A-3 *
Q627	A-2 *
Q650	A-3
Q651	A-3
Q652	A-3
Q653	A-3
Q654	A-3
Q655	A-3
Q656	A-3
Q670	B-2
Q671	B-2
Q672	B-2
Q673	B-2
Q674	B-3
Q675	B-2
Q676	B-2
Q690	C-2 *
Q691	C-3 *
Q720	B-1
Q721	B-1 *
Q722	A-1 *
Q723	A-1 *
Q724	B-1 *
Q725	C-1
Q726	C-1
Q730	B-1 *
Q731	B-2 *
Q750	F-1 *
Q751	E-1 *
Q752	E-1
Q753	E-1
Q754	E-1
Q755	D-1
Q756	D-1
Q800	C-1 *
Q801	C-1 *
Q802	C-2 *
Q803	C-2
Q804	D-1 *
Q805	E-1 *
Q806	E-2
Q807	E-1
Q820	C-1
Q821	C-1 *
Q822	C-1
Q823	C-1 *
Q824	D-1 *
Q840	D-1 *
Q841	D-1
Q842	D-1
Q843	D-1
Q844	D-1
Q845	D-1 *
Q860	F-1
Q861	F-1
Q862	F-2
Q863	F-1
Q864	G-1 *
Q865	F-1
Q866	G-1
Q867	G-1 *
Q868	G-2
Q900	G-1 *
Q901	G-1 *
Q902	G-1
Q903	G-1 *
RV501	C-3
RV560	E-3
RV561	G-3
RV601	C-3
RV611	A-3
RV800	C-2
RV801	D-1
RV802	E-2
RV860	F-2
TH520	G-2
TH880	F-2
TP501	E-3 *
TP521	G-2 *
TP540	D-2 *
TP560	E-3 *
TP611	B-3 *
TP612	B-3 *
TP660	A-2 *
TP801	F-2 *
TP820	C-1 *
TP850	E-1 *
TP851	G-1 *
TP870	F-1 *
TP890	G-2 *
X501	D-3

* mark ; B SIDE moun


CR-38
1-641-586-14
SONY
MADE IN JAPAN
IC900
E801
RV860
RV802
CV802
RV801
CV801
RV800
CV800
RV702
RV701
DL701
CV510
CN212
FL541
FL560
IC501
X501
FL501
RV501
FL540
RV56
IC590
CN215W
CN213B
RV401
RV580
CV500
RV601
RV611
DL601
TP851
TP870
TP801
TP820
TP521
TP540
TP501
TP560
TP611
TP612
TP680
TP701

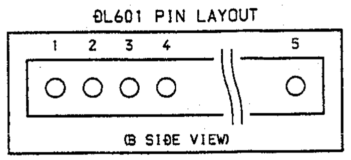
CR-38 — B SIDE —
1-641-586-14 (1)
SVO-9500MD
SVO-9500MD4

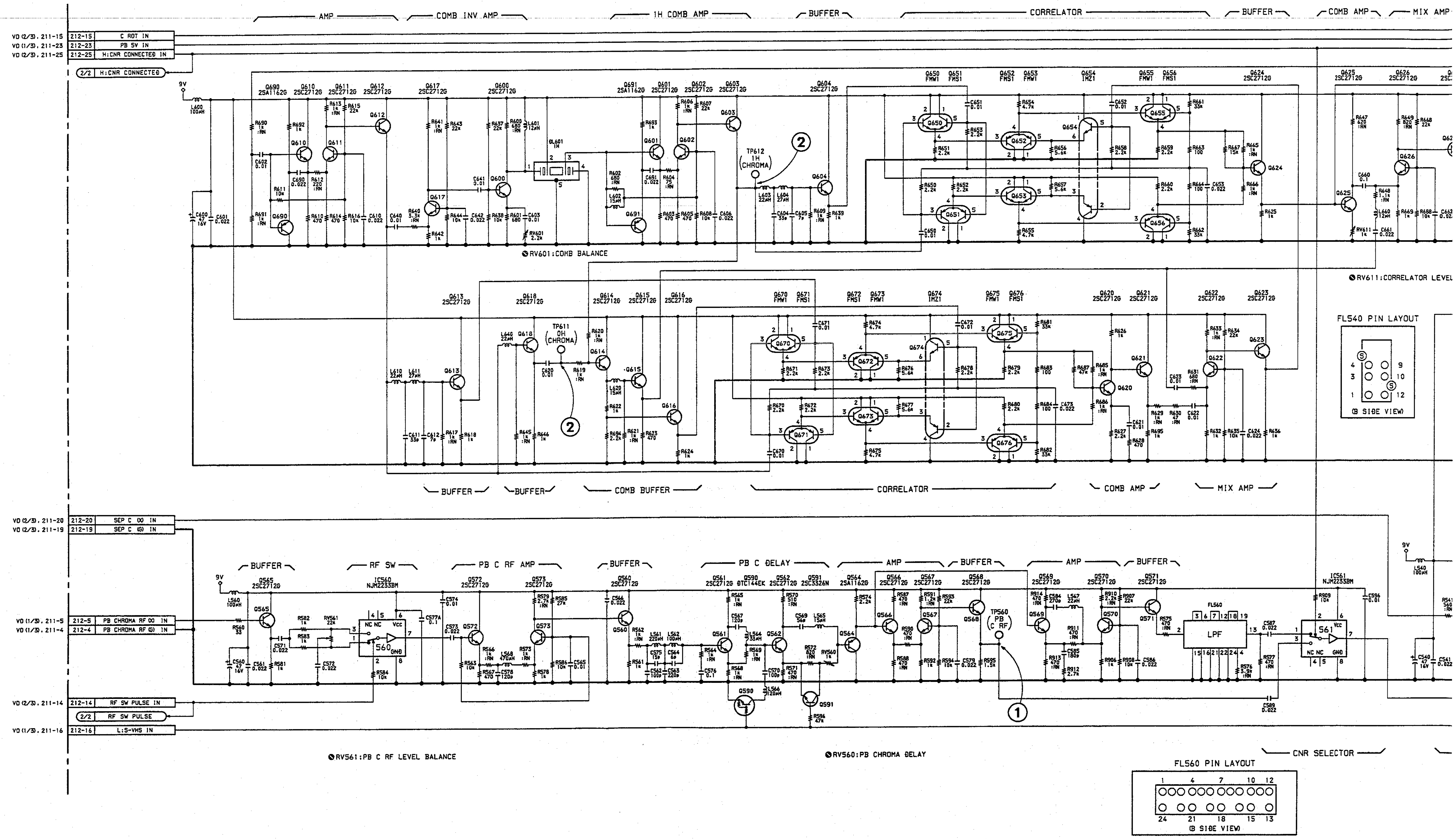
SURFACE MOUNT TYPE
DIODE/TRANSISTOR PIN LAYOUTS

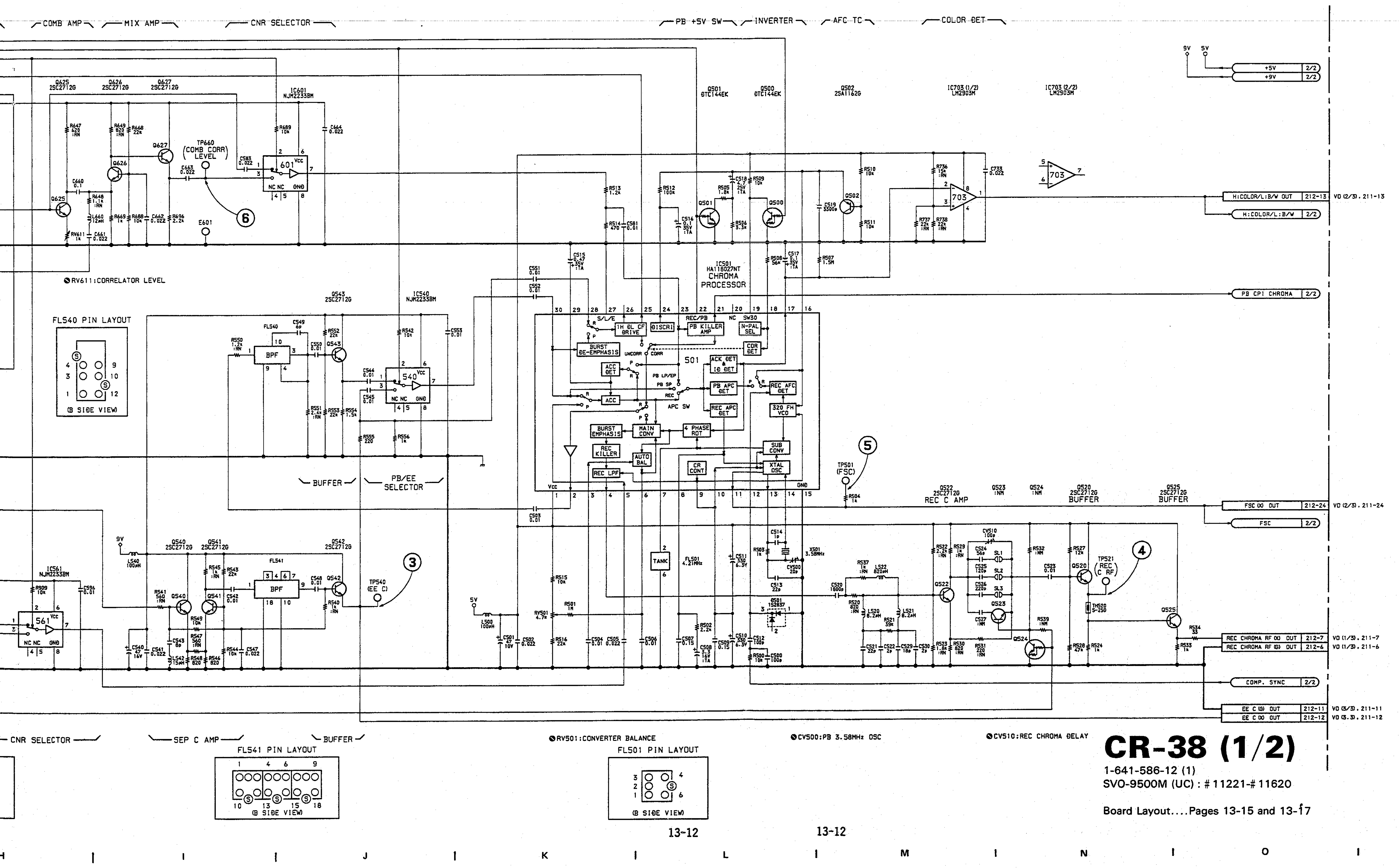

DIODE
3
2
1
3-PIN TYPE
TRANSISTOR
C
B
E
3-PIN TYPE

CR-38 (1/2); CHROMA PROCESSOR, CROSSTALK CANCELLER

SVO-9500MD (UC): Serial No. 11221 to 11620


DL601 PIN LAYOUT
1 2 3 4 5
(B SIDE VIEW)


AMP
COMB INV AMP
1H COMB AMP
BUFFER
CORRELATOR
BUFFER
COMB AMP
MIX AMP
VD (2/3). 211-15 212-15 C ROT IN
VD (1/3). 211-23 212-23 PB 5V IN
VD (2/3). 211-25 212-25 H:CNR CONNECTED IN
2/2 H:CNR CONNECTED
TP612 1H (CHROMA)
RV601:COMB BALANCE
RV611:CORRELATOR LEVEL
TP611 0H (CHROMA)
BUFFER
BUFFER
COMB BUFFER
CORRELATOR
COMB AMP
MIX AMP
FL540 PIN LAYOUT
(B SIDE VIEW)
VD (2/3). 211-20 212-20 SEP C 00 IN
VD (2/3). 211-19 212-19 SEP C (G) IN
BUFFER
RF SW
PB C RF AMP
BUFFER
PB C DELAY
AMP
BUFFER
AMP
BUFFER
VD (1/3). 211-5 212-5 PB CHROMA RF 00 IN
VD (1/3). 211-4 212-4 PB CHROMA RF (G) IN
IC560 NJM2233BM
IC561 NJM2233BM
TP560 PB (C RF)
LPF
FL560
VD (2/3). 211-14 212-14 RF SW PULSE IN
2/2 RF SW PULSE
VD (1/3). 211-16 212-16 L:S-VHS IN
RV561:PB C RF LEVEL BALANCE
RV560:PB CHROMA DELAY
CNR SELECTOR
FL560 PIN LAYOUT
1 4 7 10 12
24 21 18 15 13
(B SIDE VIEW)
A B C D E F G H


COMB AMP
MIX AMP
CNR SELECTOR
PB +5V SW
INVERTER
AFC TC
COLOR DET
Q625 2SC2712G
Q626 2SC2712G
Q627 2SC2712G
IC601 NJM2233BM
TP660 (COMB CORR LEVEL)
E601
RV611:CORRELATOR LEVEL
FLS40 PIN LAYOUT
(B SIDE VIEW)
Q543 2SC2712G
IC540 NJM2233BM
BPF
BUFFER
PB/EE SELECTOR
Q501 DTC144EK
Q500 DTC144EK
Q502 2SA1162G
IC703 (1/2) LM2903M
IC703 (2/2) LM2903M
IC501 HA118027NT CHROMA PROCESSOR
S/L/E
1H DL CP DRIVE
DISCRI
REC/PB
PB KILLER AMP
N-PAL SEL
SW30
BURST DE-EMPHASIS
COR DET
ACC DET
ACK DET & ID DET
ACC
PB APC DET
REC AFC DET
REC APC DET
320 FH VCO
APC SW
BURST EMPHASIS
MAIN CONV
4 PHASE ROT
REC KILLER
AUTO BAL
SUB CONV
REC LPF
CR CONT
XTAL OSC
TANK
FL501 4.21MHz
X501 3.58MHz
TP501 (FSC)
Q522 2SC2712G REC C AMP
Q523 :NM
Q524 :NM
Q520 2SC2712G BUFFER
Q525 2SC2712G BUFFER
TP521 (REC C RF)
TP540 (EE C)
IC561 NJM2233BM
Q540 2SC2712G
Q541 2SC2712G
Q542 2SC2712G
FL541
+5V 2/2
+9V 2/2
H:COLOR/L:B/W OUT 212-13 VO (2/3). 211-13
H:COLOR/L:B/W 2/2
PB CPI CHROMA 2/2
FSC (X) OUT 212-24 VO (2/3). 211-24
FSC 2/2
REC CHROMA RF (X) OUT 212-7 VO (1/3). 211-7
REC CHROMA RF (B) OUT 212-6 VO (1/3). 211-6
COMP. SYNC 2/2
EE C (B) OUT 212-11 VO (3/3). 211-11
EE C (X) OUT 212-12 VO (3/3). 211-12
CNR SELECTOR
SEP C AMP
BUFFER
RV501:CONVERTER BALANCE
CV500:PB 3.58MHz OSC
CV510:REC CHROMA DELAY
FLS41 PIN LAYOUT
(B SIDE VIEW)
FL501 PIN LAYOUT
(B SIDE VIEW)
H I J K L M N O P

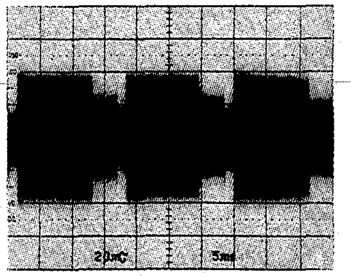
CR-38 (1/2)

1-641-586-12 (1)
SVO-9500M (UC) : #11221-#11620

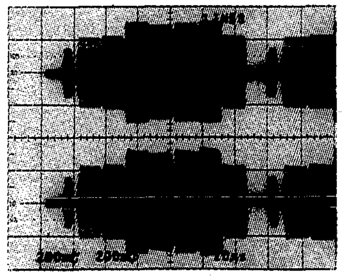
Board Layout....Pages 13-15 and 13-17

CR-38 (1/2)

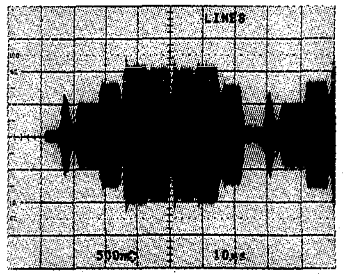
① TP560 (E-3 ∗) PB mode



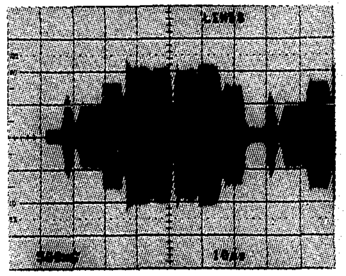
② TP611 (B-3 ∗)
TP612 (B-3 ∗) STOP (E-E) mode



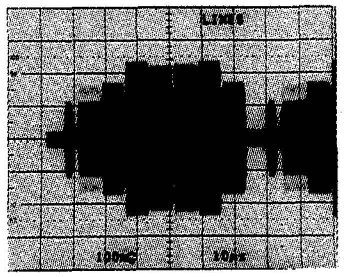
TP611 (B-3 ∗) PB mode



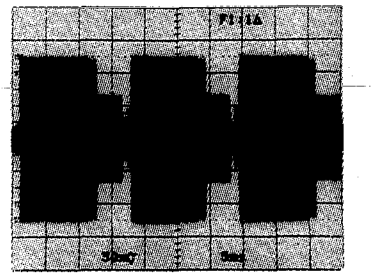
TP612 (B-3 ∗) PB mode



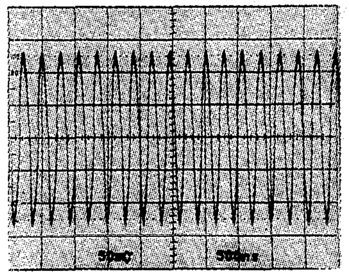
③ TP540 (D-2 ∗) STOP (E-E) mode



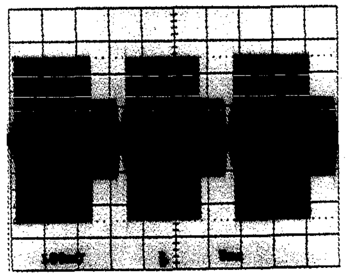
④ TP521 (G-2 ∗) REC mode



⑤ TP501 (E-3 ∗) STOP (E-E) mode



⑥ TP660 (A-2 ∗) PB mode



Measurement Condition
S-VIDEO IN: SMPTE color bars
REC mode: S-VHS
STOP (E-E) mode: S-VHS
PB mode: KRV-45HNS or KRV-51HN

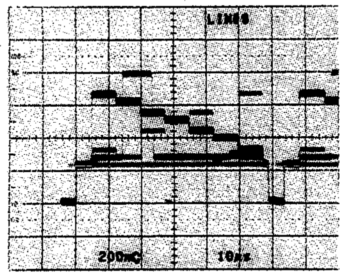
∗ mark; B SIDE mount

13-13

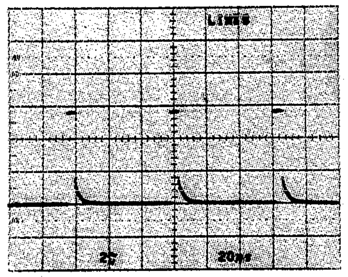
CR-38 (2/2); CHROMA PROCESS IMPROVEMENT (CPI)

SVO-9500MD (UC): Serial No. 11221 to 11620

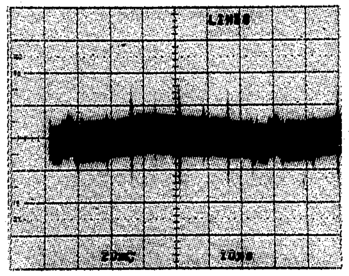
① CN212 pin 18 (G-3) STOP (E-E) mode



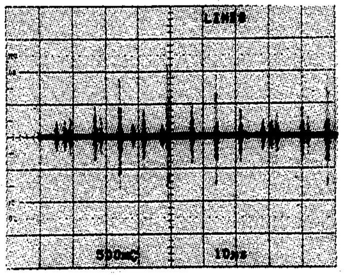
② IC900 pin 4 (G-1) STOP (E-E) mode



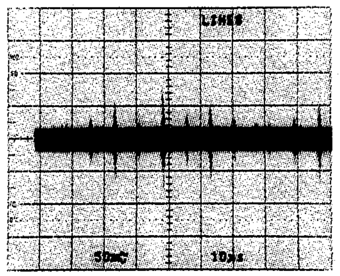
③ TP801 (F-2 ∗) STOP (E-E) mode



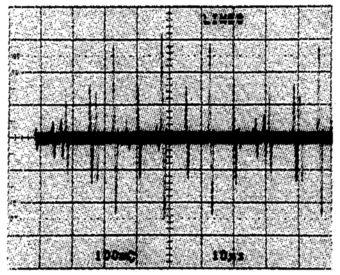
④ TP820 (C-1 ∗) STOP (E-E) mode



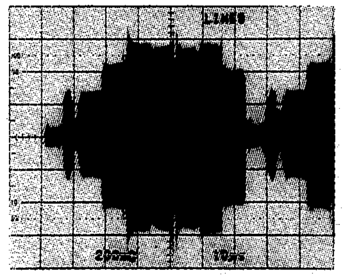
⑤ TP870 (F-1 ∗) STOP (E-E) mode



⑥ TP850 (E-1 ∗) STOP (E-E) mode



⑦ TP890 (G-2 ∗) PB mode



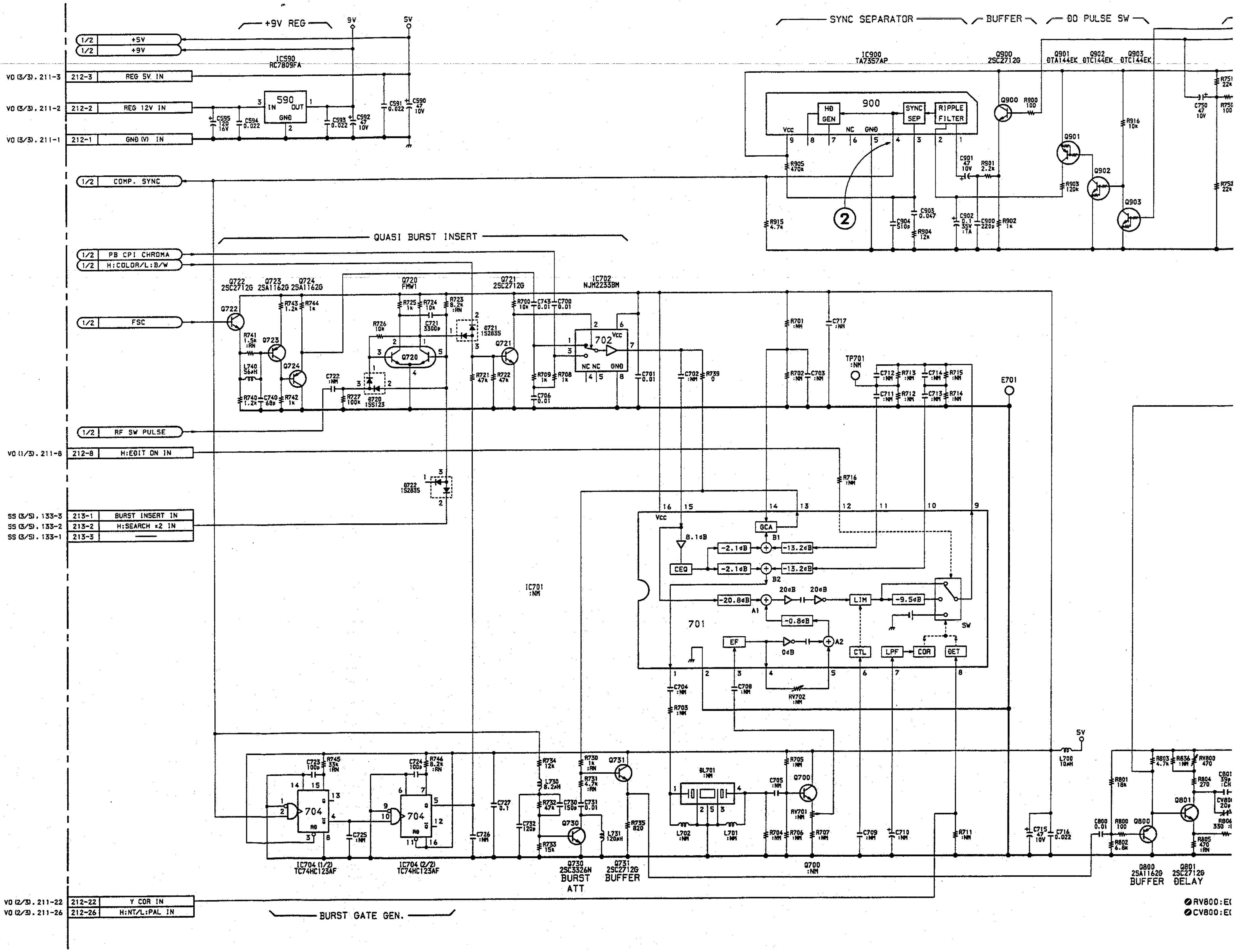
Measurement Condition

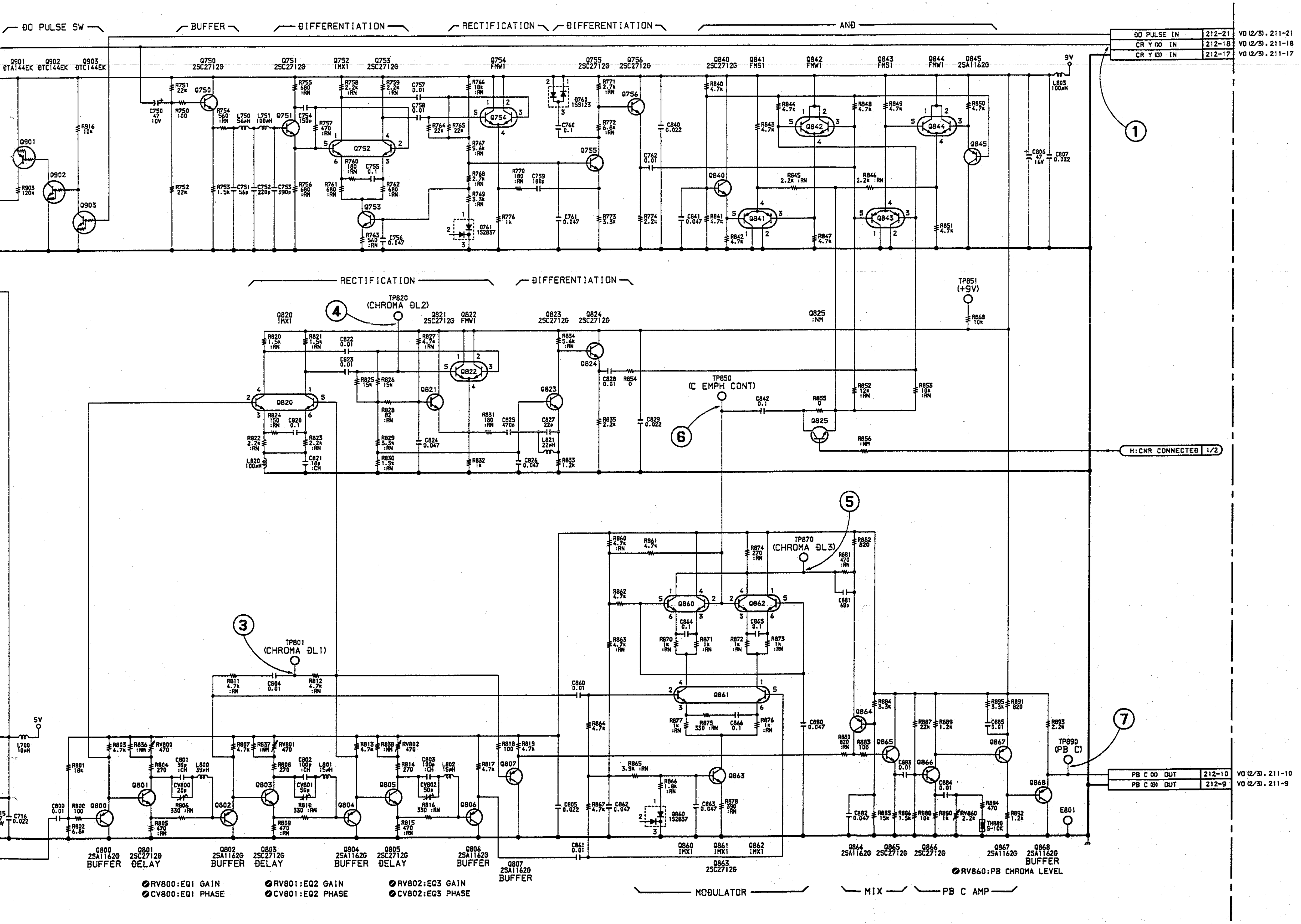
S-VIDEO IN: SMPTE color bars

STOP (E-E) mode: S-VHS

PB mode: KRV-45HNS or KRV-51HN

∗ mark; B SIDE mount


+9V REG
5V
5V
1/2 +5V
1/2 +9V
VO (3/3). 211-3 212-3 REG 5V IN
VO (3/3). 211-2 212-2 REG 12V IN
VO (3/3). 211-1 212-1 GND (V) IN
IC590 RC7809FA
590
IN OUT GND
1/2 COMP. SYNC
1/2 PB CPI CHROMA
1/2 H:COLOR/L:B/W
1/2 FSC
1/2 RF SW PULSE
VO (1/3). 211-8 212-8 H:EDIT ON IN
SS (3/5). 133-3 213-1 BURST INSERT IN
SS (3/5). 133-2 213-2 H:SEARCH ×2 IN
SS (3/5). 133-1 213-3
VO (2/3). 211-22 212-22 Y COR IN
VO (2/3). 211-26 212-26 H:NT/L:PAL IN
SYNC SEPARATOR
BUFFER
80 PULSE SW
IC900 TA7357AP
900
HD GEN
SYNC SEP
RIPPLE FILTER
Q900 2SC2712G
Q901 DTA144EK
Q902 DTC144EK
Q903 DTC144EK
②
QUASI BURST INSERT
Q722 2SC2712G
Q723 2SA1162G
Q724 2SA1162G
Q720 FMW1
Q721 2SC2712G
IC702 NJM2233BM
702
D721 1SS355
D720 1SS123
D722 1SS355
TP701 :NM
E701
IC701 :NM
701
GCA
CEQ
-2.1dB
-13.2dB
-20.8dB
-9.5dB
-0.8dB
20dB
0dB
8.1dB
LIM
EF
CTL
LPF
COR
DET
SW
A1
A2
B1
B2
RV702 :NM
704
IC704 (1/2) TC74HC123AF
IC704 (2/2) TC74HC123AF
BURST GATE GEN.
Q730 2SC3326N BURST ATT
Q731 2SC2712G BUFFER
BL701 :NM
Q700 :NM
L700 10μH
Q800 2SA1162G BUFFER
Q801 2SC2712G DELAY
RV800:E
CV800:E


ĐD PULSE SW
BUFFER
DIFFERENTIATION
RECTIFICATION
DIFFERENTIATION
AND
ĐD PULSE IN 212-21 VD (2/3). 211-21
CR Y (O) IN 212-18 VD (2/3). 211-18
CR Y (G) IN 212-17 VD (2/3). 211-17
9V
①
Q901 DTA144EK
Q902 DTC144EK
Q903 DTC144EK
Q750 2SC2712G
Q751 2SC2712G
Q752 IMX1
Q753 2SC2712G
Q754 FMW1
Q755 2SC2712G
Q756 2SC2712G
Q840 2SC2712G
Q841 FMS1
Q842 FMW1
Q843 FMS1
Q844 FMW1
Q845 2SA1162G
RECTIFICATION
DIFFERENTIATION
④
TP820 (CHROMA ĐL2)
Q820 IMX1
Q821 2SC2712G
Q822 FMW1
Q823 2SC2712G
Q824 2SC2712G
Q825 :NM
TP851 (+9V)
TP850 (C EMPH CONT)
⑥
H:CNR CONNECTED 1/2
⑤
TP870 (CHROMA ĐL3)
③
TP801 (CHROMA ĐL1)
⑦
TP890 (PB C)
PB C (O) OUT 212-10 VD (2/3). 211-10
PB C (G) OUT 212-9 VD (2/3). 211-9
E801
5V
Q800 2SA1162G BUFFER
Q801 2SC2712G ĐELAY
Q802 2SA1162G BUFFER
Q803 2SC2712G ĐELAY
Q804 2SA1162G BUFFER
Q805 2SC2712G ĐELAY
Q806 2SA1162G BUFFER
Q807 2SA1162G BUFFER
Q860 IMX1
Q861 IMX1
Q862 IMX1
Q863 2SC2712G
Q864 2SA1162G
Q865 2SC2712G
Q866 2SC2712G
Q867 2SA1162G
Q868 2SA1162G BUFFER
⊘RV800:EQ1 GAIN
⊘CV800:EQ1 PHASE
⊘RV801:EQ2 GAIN
⊘CV801:EQ2 PHASE
⊘RV802:EQ3 GAIN
⊘CV802:EQ3 PHASE
⊘RV860:PB CHROMA LEVEL
MODULATOR
MIX
PB C AMP

CR-38 (2/2)

1-641-586-12 (1)
SVO-9500MD (UC) : # 11221-# 11620

Board Layout....Pages 13-15 and 13-17

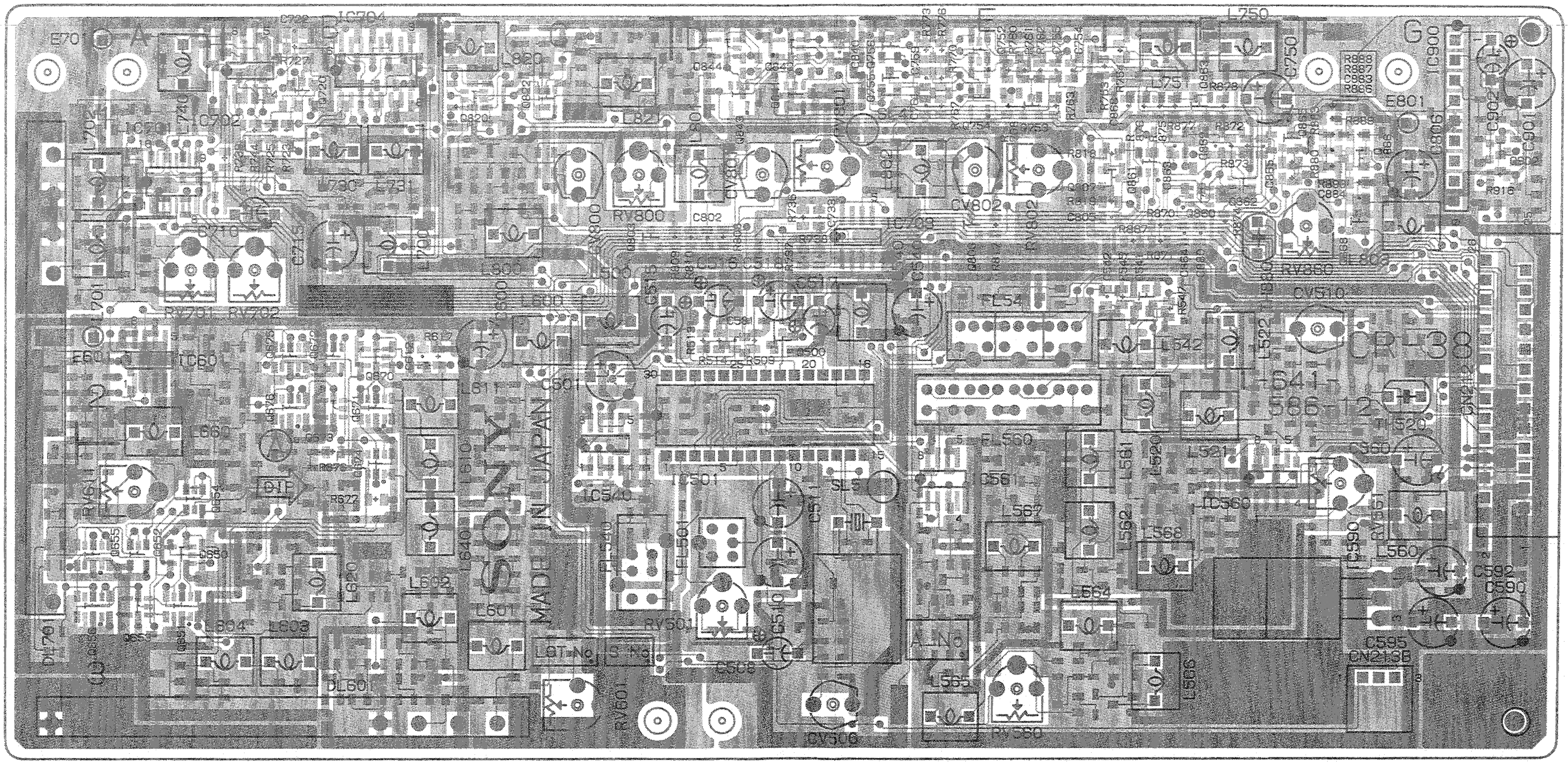
CR-38 ; CHROMA PROCESS

SVO-9500MD (UC) : Serial No. 11221 to 11620

CR-38 (1-641-586-12)

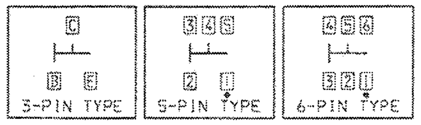
CN212	G-3
CN213	G-3
CV500	D-3
CV510	F-2
CV800	C-2
CV801	D-1
CV802	E-1
DL601	B-3
D501	D-3 *
D720	B-1 *
D721	B-1 *
D722	D-1 *
D760	E-1 *
D761	E-1 *
D860	F-1 *
E601	A-2
E701	A-1
E801	G-1
FL501	D-3
FL540	C-3
FL541	E-2
FL560	E-2
IC501	D-3
IC540	C-3
IC560	F-3
IC561	E-3
IC590	G-3
IC601	A-2
IC702	A-1
IC703	E-2
IC704	B-1
IC705	C-2
IC900	G-1
Q500	D-2
Q501	D-2 *
Q502	D-2 *
Q520	G-2 *
Q522	F-2 *
Q525	G-2 *
Q540	F-2 *
Q541	F-2
Q542	E-2 *
Q543	C-3 *
Q560	F-3 *
Q561	E-3 *
Q562	F-2 *
Q564	E-3 *
Q565	G-3 *
Q566	E-3 *
Q567	E-3 *
Q568	E-3 *
Q569	E-3 *
Q570	E-3 *
Q571	E-3 *
Q572	F-3 *
Q573	F-3 *
Q590	E-3 *
Q591	E-3
Q600	C-3 *
Q601	C-3 *
Q602	B-3 *
Q603	B-3 *
Q604	A-3 *
Q610	C-2 *
Q611	C-3 *
Q612	C-3 *
Q613	C-2 *
Q614	B-2 *
Q615	B-3 *
Q616	B-3 *
Q617	C-3 *
Q618	C-3 *
Q620	A-2 *
Q621	A-2 *
Q622	B-3 *
Q623	B-3 *
Q624	A-3 *
Q625	A-3 *
Q626	A-3 *
Q627	A-2 *
Q650	A-3
Q651	A-3
Q652	A-3
Q653	A-3
Q654	A-3
Q655	A-3
Q656	A-3
Q670	B-2
Q671	B-2
Q672	B-2
Q673	B-2
Q674	B-3
Q675	B-2
Q676	B-2
Q690	C-2 *
Q691	C-3 *
Q720	B-1
Q721	B-1 *
Q722	A-1 *
Q723	A-1 *
Q724	B-1 *
Q730	B-1 *
Q731	B-2 *
Q750	F-1 *
Q751	E-1 *
Q752	E-1
Q753	E-1
Q754	E-1
Q755	D-1
Q756	D-1
Q800	C-1 *
Q801	C-1 *
Q802	C-2 *
Q803	C-2
Q804	D-1 *
Q805	E-1 *
Q806	E-2
Q807	E-1
Q820	C-1
Q821	C-1 *
Q822	C-1
Q823	C-1 *
Q824	D-1 *
Q840	D-1 *
Q841	D-1
Q842	D-1
Q843	D-1
Q844	D-1
Q845	D-1 *
Q860	F-1
Q861	F-1
Q862	F-2
Q863	F-1
Q864	G-1 *
Q865	F-1
Q866	G-1
Q867	G-1 *
Q868	G-2
Q900	G-1 *
Q901	G-1 *
Q902	G-1
Q903	G-1 *
RV501	C-3
RV560	E-3
RV561	G-3
RV601	C-3
RV611	A-3
RV800	C-2
RV801	D-1
RV802	E-2
RV860	F-2
TH520	G-2
TH880	F-2
TP501	E-3 *
TP521	G-2 *
TP540	D-2 *
TP560	E-3 *
TP611	B-3 *
TP612	B-3 *
TP660	A-2 *
TP801	F-2 *
TP820	C-1 *
TP850	E-1 *
TP851	G-1 *
TP870	F-1 *
TP890	G-2 *
X501	D-3

* mark ; B SIDE mount


E701
A
B
IC704
C728
R727
L740
IC702
IC701
L702
L730
L731
C710
C713
L700
RV701
RV702
L701
L820
C820
L82
L800
RV800
CV800
C802
L801
CV801
CV802
RV802
IC709
E
F
L750
C750
L75
G
IC900
E801
C806
C902
C901
R916
RV860
L860
CV510
FL54
L542
L522
CR-38
1-641-586-12
TH520
C560
CN21
C511
C514
C515
C516
L600
C600
C601
IC600
E60
L660
D1E
RV611
R672
L611
L610
L640
L620
L602
L601
L604
L603
DL601
DL701
SONY
MADE IN JAPAN
LOT No.
S No.
RV601
IC540
FL540
FL561
RV501
C510
C508
IC501
SL5
FL560
C561
L567
L561
L520
L521
IC560
L562
L568
L564
L560
RV561
C590
C592
C595
CN21SB
A No.
L565
RV560
L566
CV506

CR-38 — A SIDE —
1-641-586-12 (1)
SVO-9500MD

SURFACE MOUNT TRANSISTOR PIN LAYOUTS


C
B E
3-PIN TYPE
3 4 5
2 1
5-PIN TYPE
4 5 6
3 2 1
6-PIN TYPE

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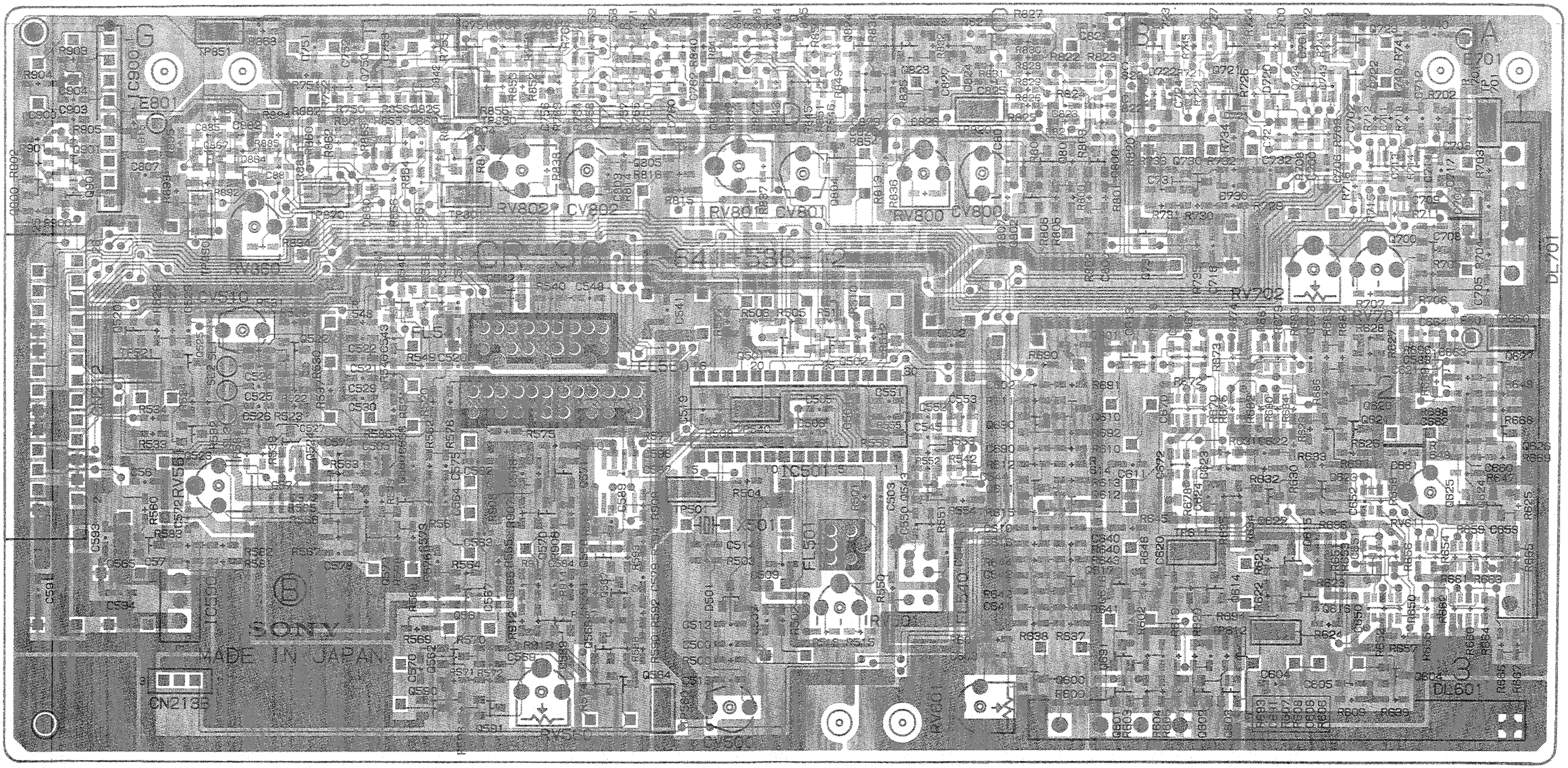
CR-38 ; CHROMA PROCESS

SVO-9500MD (UC) : Serial No. 11221 to 11620

CR-38 (1-641-586-12)

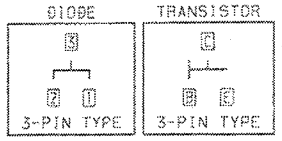
CN212	G-3
CN213	G-3
CV500	D-3
CV510	F-2
CV800	C-2
CV801	D-1
CV802	E-1
DL601	B-3
D501	D-3 *
D720	B-1 *
D721	B-1 *
D722	D-1 *
D760	E-1 *
D761	E-1 *
D860	F-1 *
E601	A-2
E701	A-1
E801	G-1
FL501	D-3
FL540	C-3
FL541	E-2
FL560	E-2
IC501	D-3
IC540	C-3
IC560	F-3
IC561	E-3
IC590	G-3
IC601	A-2
IC702	A-1
IC703	E-2
IC704	B-1
IC705	C-2
IC900	G-1
Q500	D-2
Q501	D-2 *
Q502	D-2 *
Q520	G-2 *
Q522	F-2 *
Q525	G-2 *
Q540	F-2 *
Q541	F-2
Q542	E-2 *
Q543	C-3 *
Q560	F-3 *
Q561	E-3 *
Q562	F-2 *
Q564	E-3 *
Q565	G-3 *
Q566	E-3 *
Q567	E-3 *
Q568	E-3 *
Q569	E-3 *
Q570	E-3 *
Q571	E-3 *
Q572	F-3 *
Q573	F-3 *
Q590	E-3 *
Q591	E-3
Q600	C-3 *
Q601	C-3 *
Q602	B-3 *
Q603	B-3 *
Q604	A-3 *
Q610	C-2 *
Q611	C-3 *
Q612	C-3 *
Q613	C-2 *
Q614	B-2 *
Q615	B-3 *
Q616	B-3 *
Q617	C-3 *
Q618	C-3 *
Q620	A-2 *
Q621	A-2 *
Q622	B-3 *
Q623	B-3 *
Q624	A-3 *
Q625	A-3 *
Q626	A-3 *
Q627	A-2 *
Q650	A-3
Q651	A-3
Q652	A-3
Q653	A-3
Q654	A-3
Q655	A-3
Q656	A-3
Q670	B-2
Q671	B-2
Q672	B-2
Q673	B-2
Q674	B-3
Q675	B-2
Q676	B-2
Q690	C-2 *
Q691	C-3 *
Q720	B-1
Q721	B-1 *
Q722	A-1 *
Q723	A-1 *
Q724	B-1 *
Q730	B-1 *
Q731	B-2 *
Q750	F-1 *
Q751	E-1 *
Q752	E-1
Q753	E-1
Q754	E-1
Q755	D-1
Q756	D-1
Q800	C-1 *
Q801	C-1 *
Q802	C-2 *
Q803	C-2
Q804	D-1 *
Q805	E-1 *
Q806	E-2
Q807	E-1
Q820	C-1
Q821	C-1 *
Q822	C-1
Q823	C-1 *
Q824	D-1 *
Q840	D-1 *
Q841	D-1
Q842	D-1
Q843	D-1
Q844	D-1
Q845	D-1 *
Q860	F-1
Q861	F-1
Q862	F-2
Q863	F-1
Q864	G-1 *
Q865	F-1
Q866	G-1
Q867	G-1 *
Q868	G-2
Q900	G-1 *
Q901	G-1 *
Q902	G-1
Q903	G-1 *
RV501	C-3
RV560	E-3
RV561	G-3
RV601	C-3
RV611	A-3
RV800	C-2
RV801	D-1
RV802	E-2
RV860	F-2
TH520	G-2
TH880	F-2
TP501	E-3 *
TP521	G-2 *
TP540	D-2 *
TP560	E-3 *
TP611	B-3 *
TP612	B-3 *
TP660	A-2 *
TP801	F-2 *
TP820	C-1 *
TP850	E-1 *
TP851	G-1 *
TP870	F-1 *
TP890	G-2 *
X501	D-3

* mark ; B SIDE mount


CR-38 1-641-586-12
SONY
MADE IN JAPAN
IC501
IC900
IC550
FL501
FL540
X501
RV800
CV800
RV801
CV801
RV802
CV802
RV560
RV561
RV601
RV611
RV701
RV702
DL601
DL701
CN2135
TP851

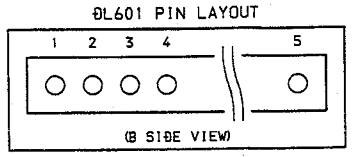
CR-38 — B SIDE —
1-641-586-12 (1)
SVO-9500MD

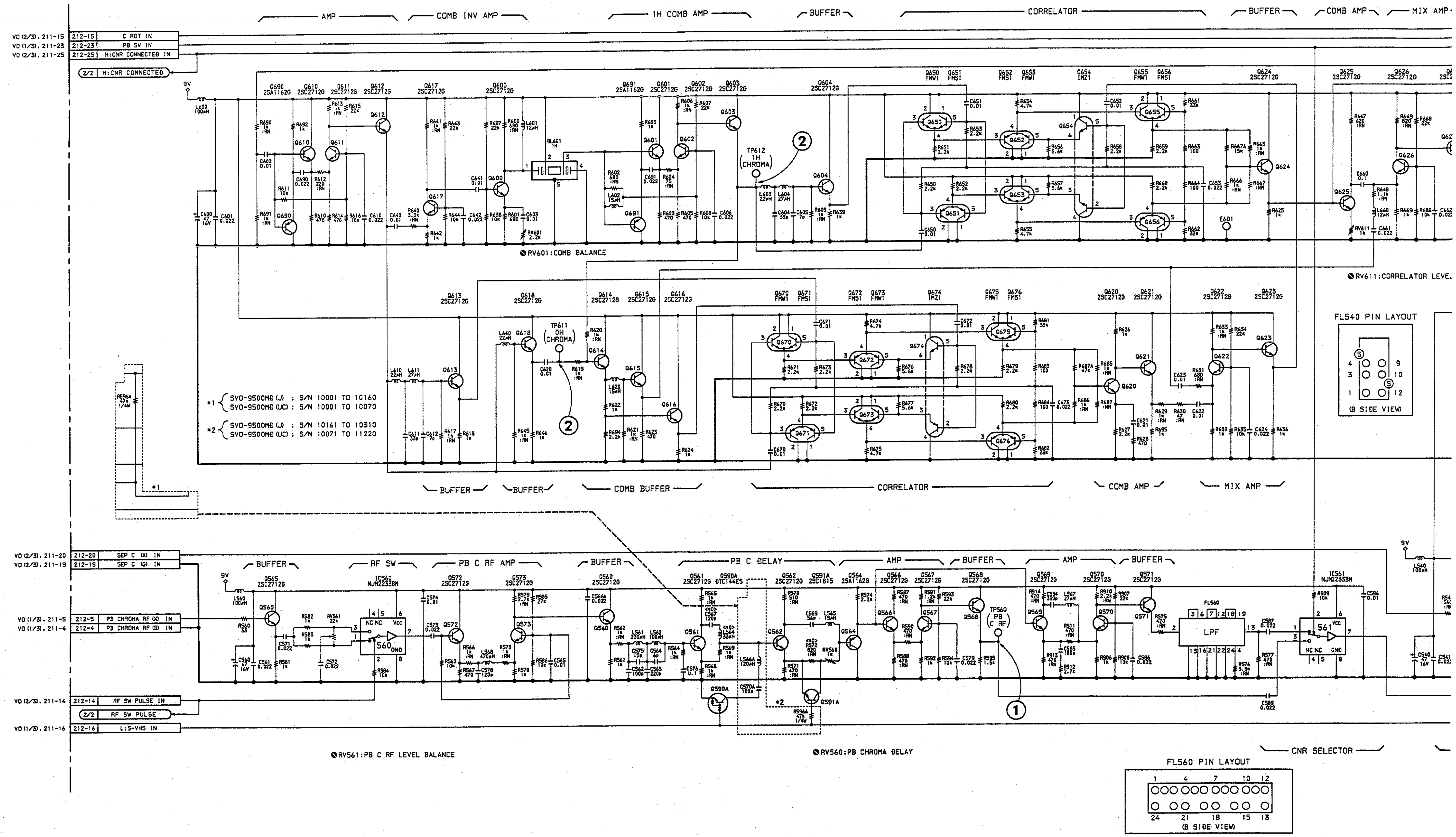
SURFACE MOUNT TYPE
DIODE/TRANSISTOR PIN LAYOUTS


DIODE
TRANSISTOR
3
2
1
C
B
E
3-PIN TYPE
3-PIN TYPE

CR-38 (1/2); CHROMA PROCESSOR, CROSSTALK CANCELLER

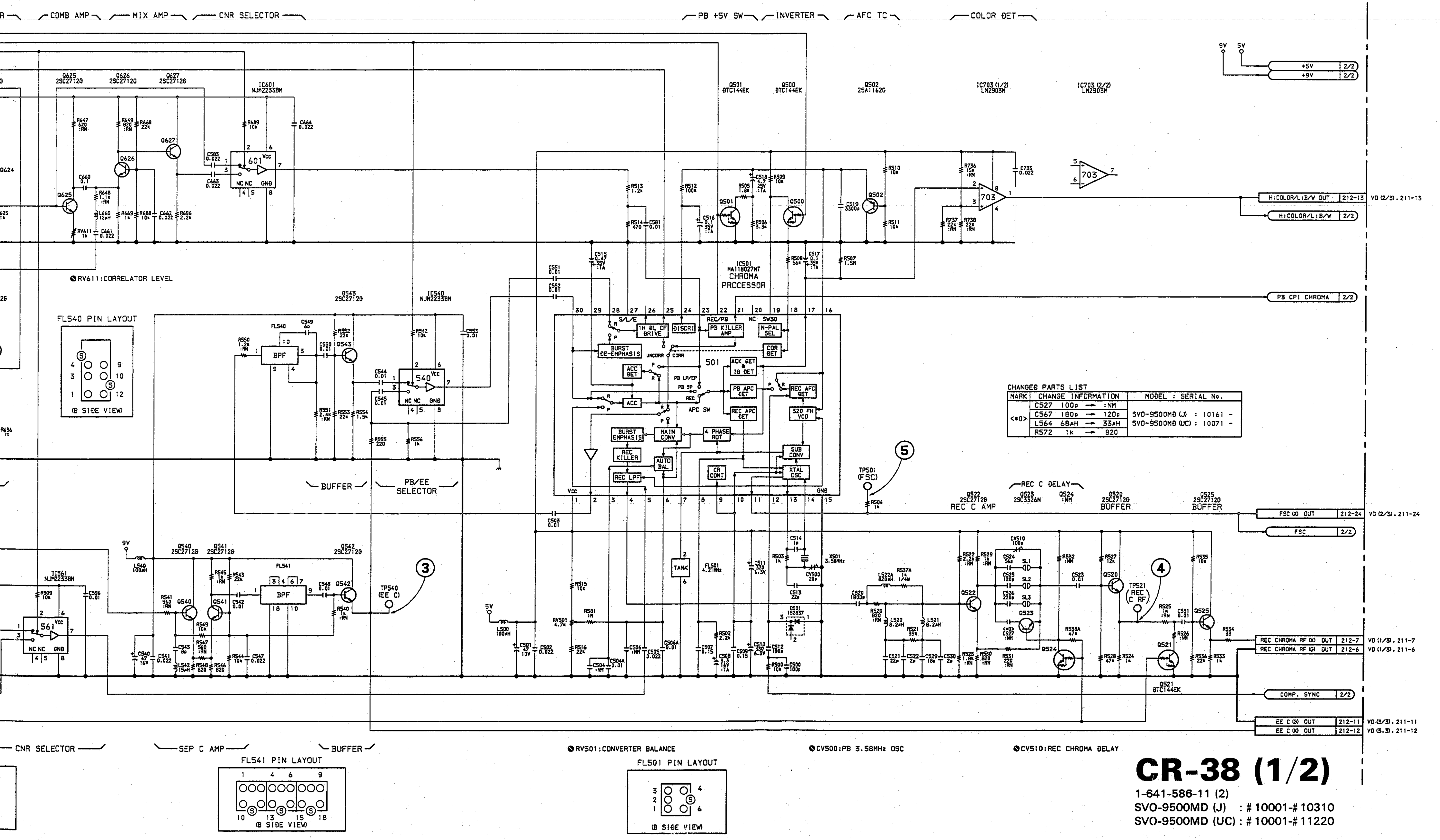
SVO-9500MD (J) : Serial No. 10001 to 10310
SVO-9500MD (UC): Serial No. 10001 to 11220


DL601 PIN LAYOUT
1 2 3 4 5
(B SIDE VIEW)


AMP
COMB INV AMP
1H COMB AMP
BUFFER
CORRELATOR
BUFFER
COMB AMP
MIX AMP
VD (2/3). 211-15 212-15 C ROT IN
VD (1/3). 211-23 212-23 PB SV IN
VD (2/3). 211-25 212-25 H:CNR CONNECTED IN
2/2 H:CNR CONNECTED
9V
TP612 (1H CHROMA)
TP611 (0H (CHROMA))
RV601:COMB BALANCE
RV611:CORRELATOR LEVEL
E601
FL540 PIN LAYOUT
4 9
3 10
1 12
(B SIDE VIEW)
BUFFER
BUFFER
COMB BUFFER
CORRELATOR
COMB AMP
MIX AMP
VD (2/3). 211-20 212-20 SEP C (X) IN
VD (2/3). 211-19 212-19 SEP C (G) IN
VD (1/3). 211-5 212-5 PB CHROMA RF (X) IN
VD (1/3). 211-4 212-4 PB CHROMA RF (G) IN
VD (2/3). 211-14 212-14 RF SW PULSE IN
2/2 RF SW PULSE
VD (1/3). 211-16 212-16 L:S-VHS IN
BUFFER
RF SW
PB C RF AMP
BUFFER
PB C DELAY
AMP
BUFFER
AMP
BUFFER
IC560 NJM2233BM
IC561 NJM2233BM
FL560
LPF
TP560 (PB C RF)
RV561:PB C RF LEVEL BALANCE
RV560:PB CHROMA DELAY
CNR SELECTOR
FL560 PIN LAYOUT
1 4 7 10 12
24 21 18 15 13
(B SIDE VIEW)
①
②

*1 { SVO-9500MD (J) : S/N 10001 TO 10160
SVO-9500MD (UC) : S/N 10001 TO 10070

*2 { SVO-9500MD (J) : S/N 10161 TO 10310
SVO-9500MD (UC) : S/N 10071 TO 11220


COMB AMP
MIX AMP
CNR SELECTOR
PB +5V SW
INVERTER
AFC TC
COLOR DET
IC601 NJM2233BM
Q625 2SC2712G
Q626 2SC2712G
Q627 2SC2712G
Q501 DTC144EK
Q500 DTC144EK
Q502 2SA1162G
IC703 (1/2) LM2903M
IC703 (2/2) LM2903M
+5V
+9V
H:COLOR/L:B/W OUT
H:COLOR/L:B/W
VD (2/3). 211-13
RV611:CORRELATOR LEVEL
FL540 PIN LAYOUT
(B SIDE VIEW)
Q543 2SC2712G
IC540 NJM2233BM
IC501 HA118027NT CHROMA PROCESSOR
PB CPI CHROMA
BUFFER
PB/EE SELECTOR
TP501 (FSC)
REC C DELAY
Q522 2SC2712G REC C AMP
Q523 2SC5326N
Q524 :NM
Q520 2SC2712G BUFFER
Q525 2SC2712G BUFFER
FSC 00 OUT
FSC
VD (2/3). 211-24
IC561 NJM2233BM
Q540 2SC2712G
Q541 2SC2712G
Q542 2SC2712G
TP540 (EE C)
TP521 (REC C RF)
Q521 DTC144EK
REC CHROMA RF 00 OUT
REC CHROMA RF (G) OUT
VD (1/3). 211-7
VD (1/3). 211-6
COMP. SYNC
EE C (G) OUT
EE C 00 OUT
VD (3/3). 211-11
VD (3/3). 211-12
CNR SELECTOR
SEP C AMP
BUFFER
RV501:CONVERTER BALANCE
CV500:PB 3.58MHz OSC
CV510:REC CHROMA DELAY
FL541 PIN LAYOUT
(B SIDE VIEW)
FL501 PIN LAYOUT
(B SIDE VIEW)

CHANGED PARTS LIST

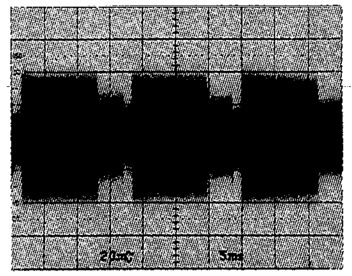
MARK	CHANGE INFORMATION	MODEL : SERIAL No.
<*0>	C527 100p → :NM	SVO-9500MD (J) : 10161 - SVO-9500MD (UC) : 10071 -
	C567 180p → 120p	
	L564 68μH → 33μH	
	R572 1k → 820	

CR-38 (1/2)

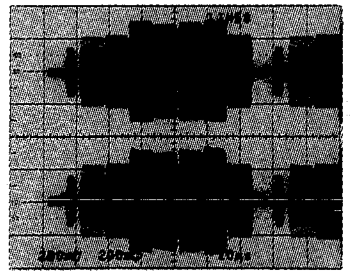
1-641-586-11 (2)
SVO-9500MD (J) : # 10001-# 10310
SVO-9500MD (UC) : # 10001-# 11220

Board Layout....Pages 13-21 and 13-23

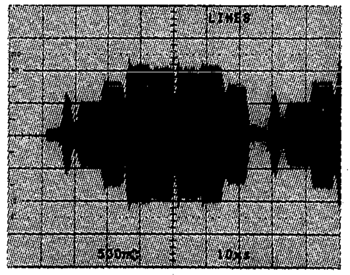
① TP560 (E-3 ∗) PB mode



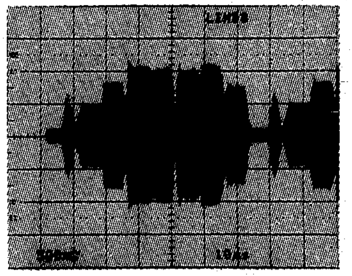
② TP611 (B-3 ∗)
TP612 (B-3 ∗) STOP (E-E) mode



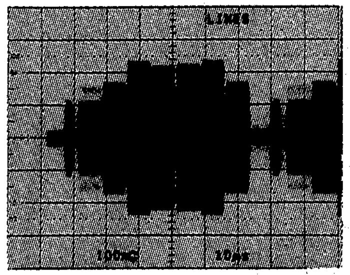
TP611 (B-3 ∗) PB mode



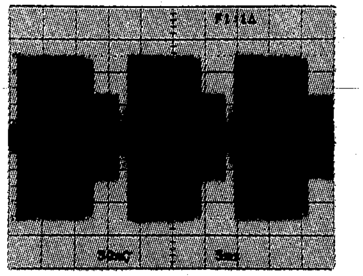
TP612 (B-3 ∗) PB mode



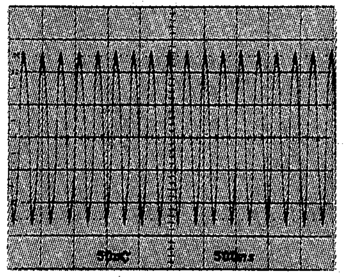
③ TP540 (D-2 ∗) STOP (E-E) mode



④ TP521 (G-2 ∗) REC mode



⑤ TP501 (E-3 ∗) STOP (E-E) mode



Measurement Condition

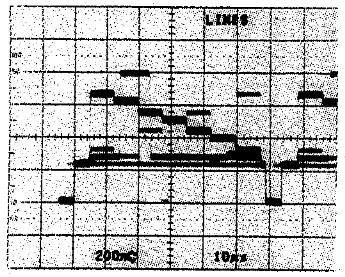
S-VIDEO IN: SMPTE color bars
REC mode: S-VHS
STOP (E-E) mode: S-VHS
PB mode: KRV-45HNS or KRV-51HN

∗ mark; B SIDE mount

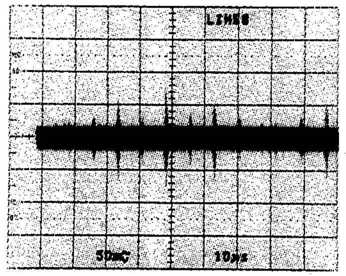
CR-38 (2/2); CHROMA PROCESS IMPROVEMENT (CPI)

SVO-9500MD (J) : Serial No. 10001 to 10310
SVO-9500MD (UC): Serial No. 10001 to 11220

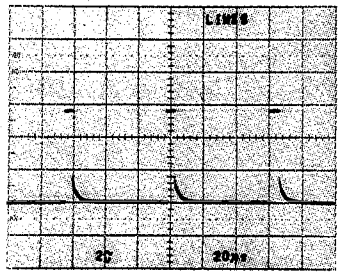
① CN212 pin 18 (G-3) STOP (E-E) mode



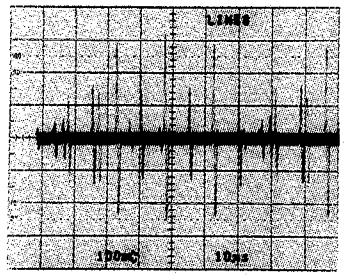
⑤ TP870 (F-1 ∗) STOP (E-E) mode



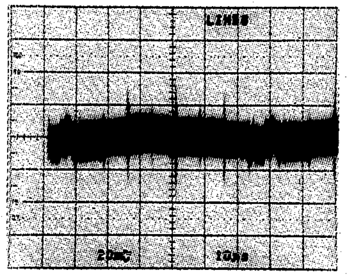
② IC900 pin 4 (G-1) STOP (E-E) mode



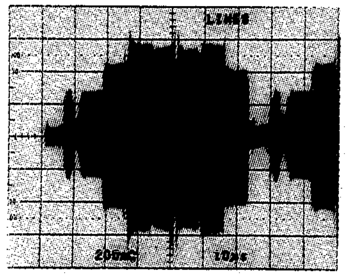
⑥ TP850 (E-1 ∗) STOP (E-E) mode



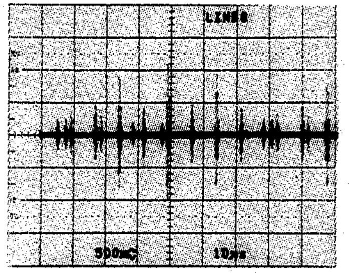
③ TP801 (F-2 ∗) STOP (E-E) mode



⑦ TP890 (G-2 ∗) PB mode

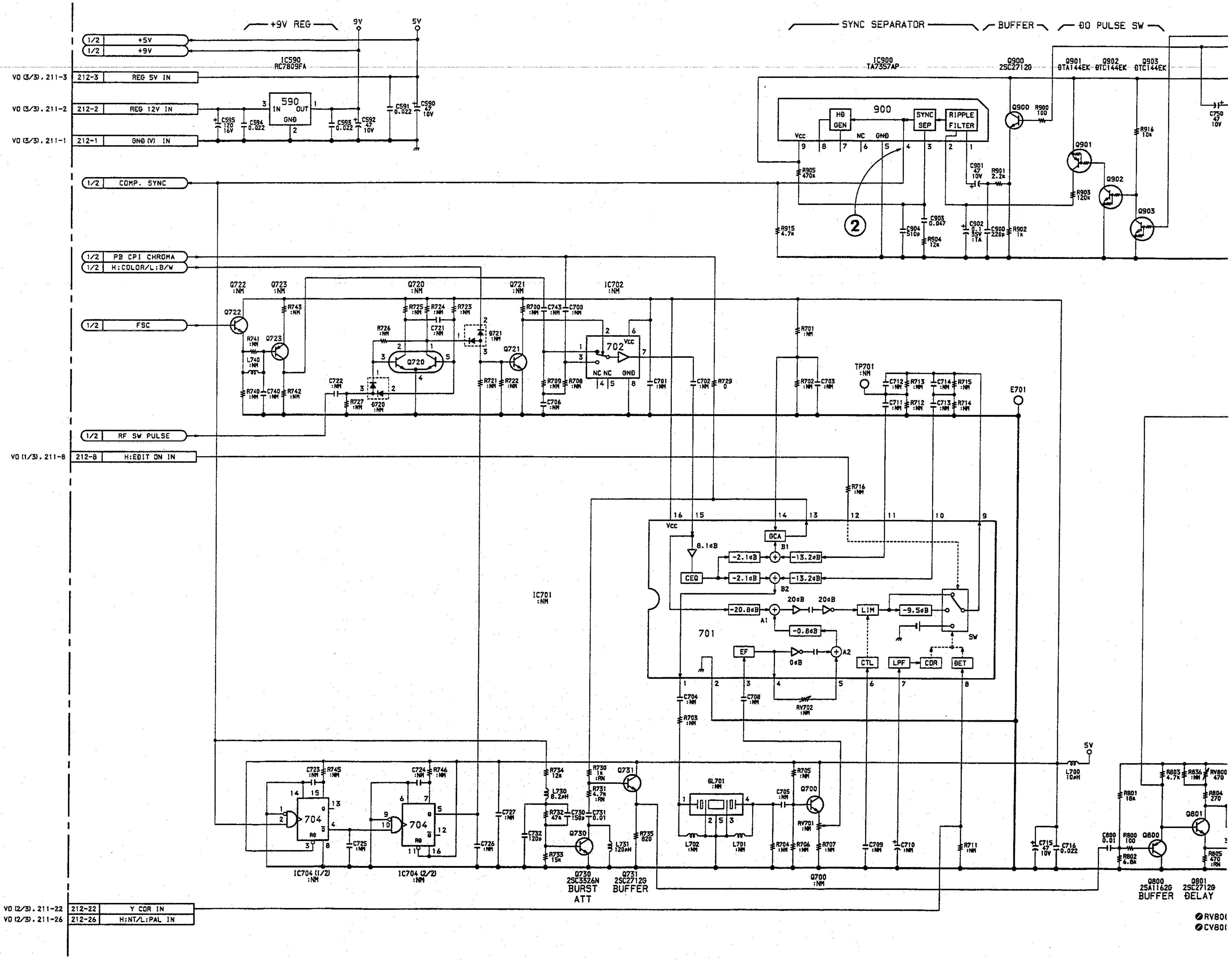


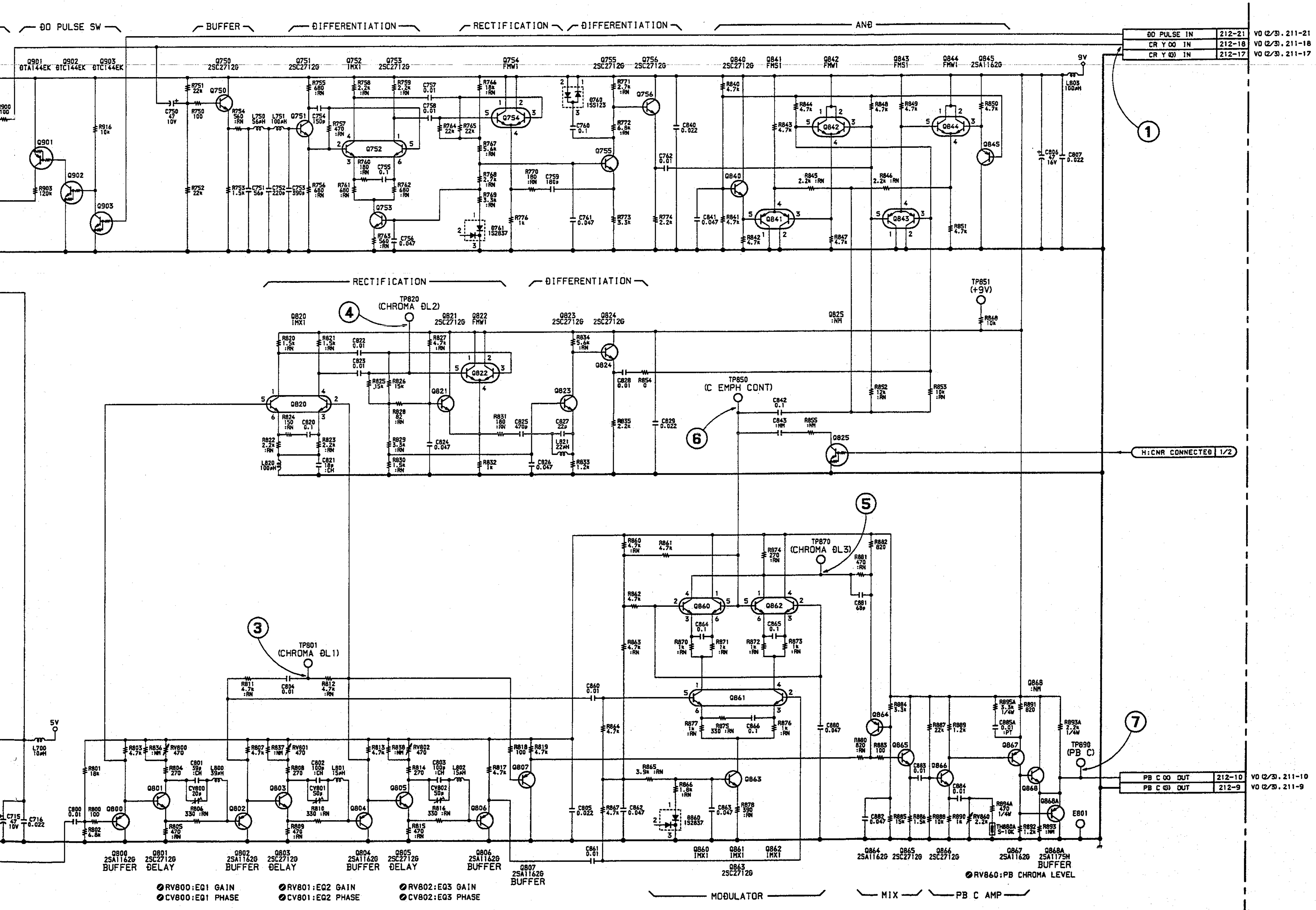
④ TP820 (C-1 ∗) STOP (E-E) mode



Measurement Condition
S-VIDEO IN: SMPTE color bars
STOP (E-E) mode: S-VHS
PB mode: KRV-45HNS or KRV-51HN

∗ mark; B SIDE mount


+9V REG
9V
5V
1/2 +5V
1/2 +9V
VO (3/3). 211-3 212-3 REG 5V IN
VO (3/3). 211-2 212-2 REG 12V IN
VO (3/3). 211-1 212-1 GND (V) IN
IC590 RC7809FA
590
IN OUT GND
1/2 COMP. SYNC
1/2 PB CPI CHROMA
1/2 H:COLOR/L:B/W
1/2 FSC
1/2 RF SW PULSE
VO (1/3). 211-8 212-8 H:EDIT ON IN
VO (2/3). 211-22 212-22 Y COR IN
VO (2/3). 211-26 212-26 H:NT/L:PAL IN
SYNC SEPARATOR
BUFFER
80 PULSE SW
IC900 TA7357AP
900
HD GEN
SYNC SEP
RIPPLE FILTER
Q900 2SC2712G
Q901 DTA144EK
Q902 DTC144EK
Q903 DTC144EK
②
Q722 :NM
Q723 :NM
Q720 :NM
Q721 :NM
IC702 :NM
702
TP701 :NM
E701
IC701 :NM
701
CEQ
GCA
LIM
EF
CTL
LPF
COR
BET
SW
IC704 (1/2) :NM
IC704 (2/2) :NM
704
Q730 2SC3326N BURST ATT
Q731 2SC2712G BUFFER
Q700 :NM
5V
L700 10μH
Q800 2SA1162G BUFFER
Q801 2SC2712G DELAY


ĐD PULSE SW
BUFFER
DIFFERENTIATION
RECTIFICATION
DIFFERENTIATION
AND
ĐD PULSE IN 212-21 VD (2/3).211-21
CR Y (X) IN 212-18 VD (2/3).211-18
CR Y (G) IN 212-17 VD (2/3).211-17
9V
①
RECTIFICATION
DIFFERENTIATION
④
TP820 (CHROMA ĐL2)
TP851 (+9V)
TP850 (C EMPH CONT)
⑥
H:CNR CONNECTED 1/2
⑤
TP870 (CHROMA ĐL3)
③
TP801 (CHROMA ĐL1)
5V
⑦
TP890 (PB C)
PB C (X) OUT 212-10 VD (2/3).211-10
PB C (G) OUT 212-9 VD (2/3).211-9
E801
Q800 2SA1162G BUFFER
Q801 2SC2712G ĐELAY
Q802 2SA1162G BUFFER
Q803 2SC2712G ĐELAY
Q804 2SA1162G BUFFER
Q805 2SC2712G ĐELAY
Q806 2SA1162G BUFFER
Q807 2SA1162G BUFFER
Q860 IMX1
Q861 IMX1
Q862 IMX1
Q863 2SC2712G
Q864 2SA1162G
Q865 2SC2712G
Q866 2SC2712G
Q867 2SA1162G
Q868A 2SA1175H BUFFER
RV800:EQ1 GAIN
CV800:EQ1 PHASE
RV801:EQ2 GAIN
CV801:EQ2 PHASE
RV802:EQ3 GAIN
CV802:EQ3 PHASE
RV860:PB CHROMA LEVEL
MODULATOR
MIX
PB C AMP

CR-38 (2/2)

1-641-586-11 (2)
SVO-9500MD (J) : #10001-#10310
SVO-9500MD (UC) : #10001-#11220

Board Layout....Pages 13-21 and 13-23

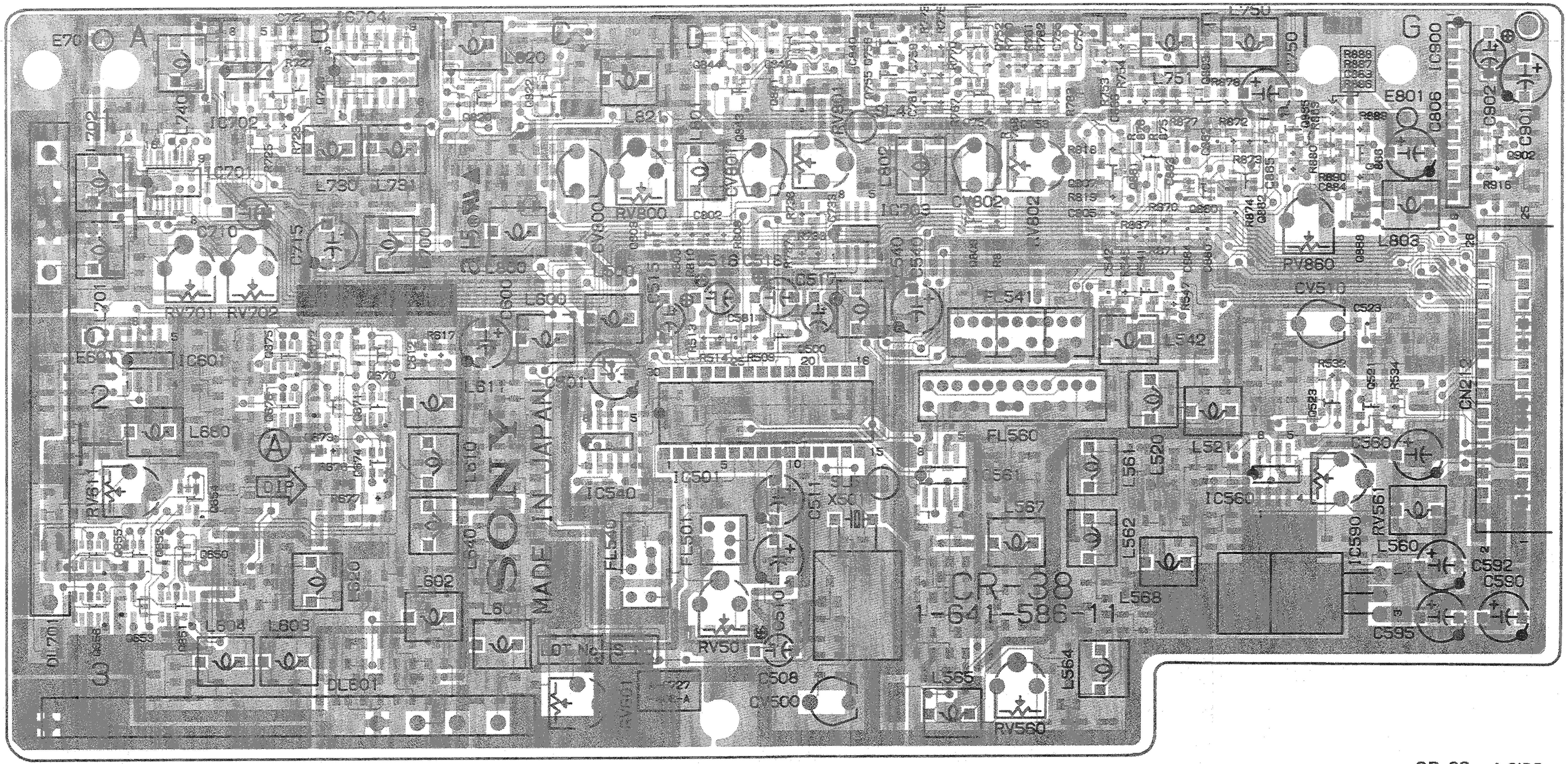
CR-38; CHROMA PROCESS

SVO-9500MD (J) : Serial No. 10001 to 10310
SVO-9500MD (UC): Serial No. 10001 to 11220

CR-38 (1-641-586-11)

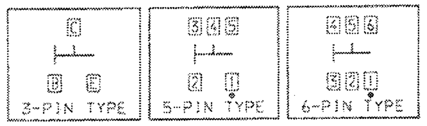
CN212	G-2
CV500	D-3
CV510	F-2
CV800	C-2
CV801	D-2
CV802	E-1
DL601	B-3
D501	D-3 *
D760	E-1 *
D761	E-1 *
D860	F-1 *
E601	A-2
E701	A-1
E801	G-1
FL501	D-3
FL540	C-3
FL541	E-2
FL560	E-2
IC501	D-3
IC540	C-3
IC560	F-3
IC561	E-3
IC590	G-3
IC601	A-2
IC703	E-1
IC900	G-1
Q500	D-2
Q501	D-2 *
Q502	D-2 *
Q520	G-2 *
Q521	G-2
Q522	F-2 *
Q523	G-2
Q524	F-2
Q525	G-3 *
Q540	F-2 *
Q541	F-2
Q542	E-2 *
Q543	C-3 *
Q560	F-3 *
Q561	E-3 *
Q562	E-3 *
Q564	E-3 *
Q565	G-3 *
Q566	E-3 *
Q567	E-3 *
Q568	E-3 *
Q569	E-3 *
Q570	E-3 *
Q571	E-3 *
Q572	F-3 *
Q573	F-3 *
Q600	C-3 *
Q601	C-3 *
Q602	B-3 *
Q603	B-3 *
Q604	A-3 *
Q610	C-2 *
Q611	C-3 *
Q612	C-3 *
Q613	C-2 *
Q614	B-3 *
Q615	B-3 *
Q616	B-3 *
Q617	C-3 *
Q618	C-3 *
Q620	A-2 *
Q621	A-2 *
Q622	B-3 *
Q623	B-3 *
Q624	A-3 *
Q625	A-3 *
Q626	A-3 *
Q627	A-2 *
Q650	A-3
Q651	A-3
Q652	A-3
Q653	A-3
Q654	A-3
Q655	A-3
Q656	A-3
Q670	B-2
Q671	B-2
Q672	B-2
Q673	B-2
Q674	B-3
Q675	B-2
Q676	B-2
Q690	C-2 *
Q691	C-3 *
Q730	B-1 *
Q731	B-1 *
Q750	F-1 *
Q751	E-1 *
Q752	E-1
Q753	E-2
Q754	E-1
Q755	E-1
Q756	D-1
Q800	C-1 *
Q801	C-1 *
Q802	C-2 *
Q803	C-2
Q804	D-1 *
Q805	E-1 *
Q806	E-2
Q807	E-1
Q820	C-1
Q821	C-1 *
Q822	C-1
Q823	C-1 *
Q824	D-1 *
Q840	D-1 *
Q841	D-1
Q842	D-1
Q843	D-1
Q844	D-1
Q845	D-1 *
Q860	F-1
Q861	F-1
Q862	F-2
Q863	F-1
Q864	G-1 *
Q865	F-1
Q866	G-1
Q867	G-1 *
Q868	G-2
Q900	G-1 *
Q901	G-1 *
Q902	G-1
Q903	G-1 *
RV501	D-3
RV560	E-3
RV561	G-3
RV601	C-3
RV611	A-3
RV800	C-1
RV801	D-1
RV802	E-1
RV860	F-2
TP501	E-3 *
TP521	G-2 *
TP540	D-2 *
TP560	E-3 *
TP611	B-3 *
TP612	B-3 *
TP801	E-1 *
TP820	C-1 *
TP850	E-1 *
TP851	G-1 *
TP870	F-1 *
TP890	G-1 *
X501	D-3

* mark ; B SIDE mount


E701
A
B
C
D
G
IC704
IC702
IC703
IC601
IC501
IC540
IC560
IC590
IC900
L702
L701
L740
L720
L730
L731
L820
L821
L801
L802
L751
L750
L803
L600
L611
L610
L620
L602
L601
L604
L603
L680
L540
L541
L542
L520
L521
L561
L562
L560
L567
L568
L565
L564
RV701
RV702
RV800
RV801
RV802
RV860
RV611
RV501
RV561
RV560
RV50
CV800
CV801
CV802
CV510
CV500
C710
C715
C600
C501
C510
C511
C515
C516
C517
C540
C560
C592
C590
C595
C508
C806
C901
C902
FL541
FL560
FL540
FL501
X501
E601
E801
CN212
DL701
DL601
SONY
MADE IN JAPAN
CR-38
1-641-586-11

CR-38 – A SIDE –
1-641-586-11 (1)
SVO-9500MD

SURFACE MOUNT TRANSISTOR PIN LAYOUTS


C
B E
3-PIN TYPE
3 4 5
2 1
5-PIN TYPE
4 5 6
3 2 1
6-PIN TYPE

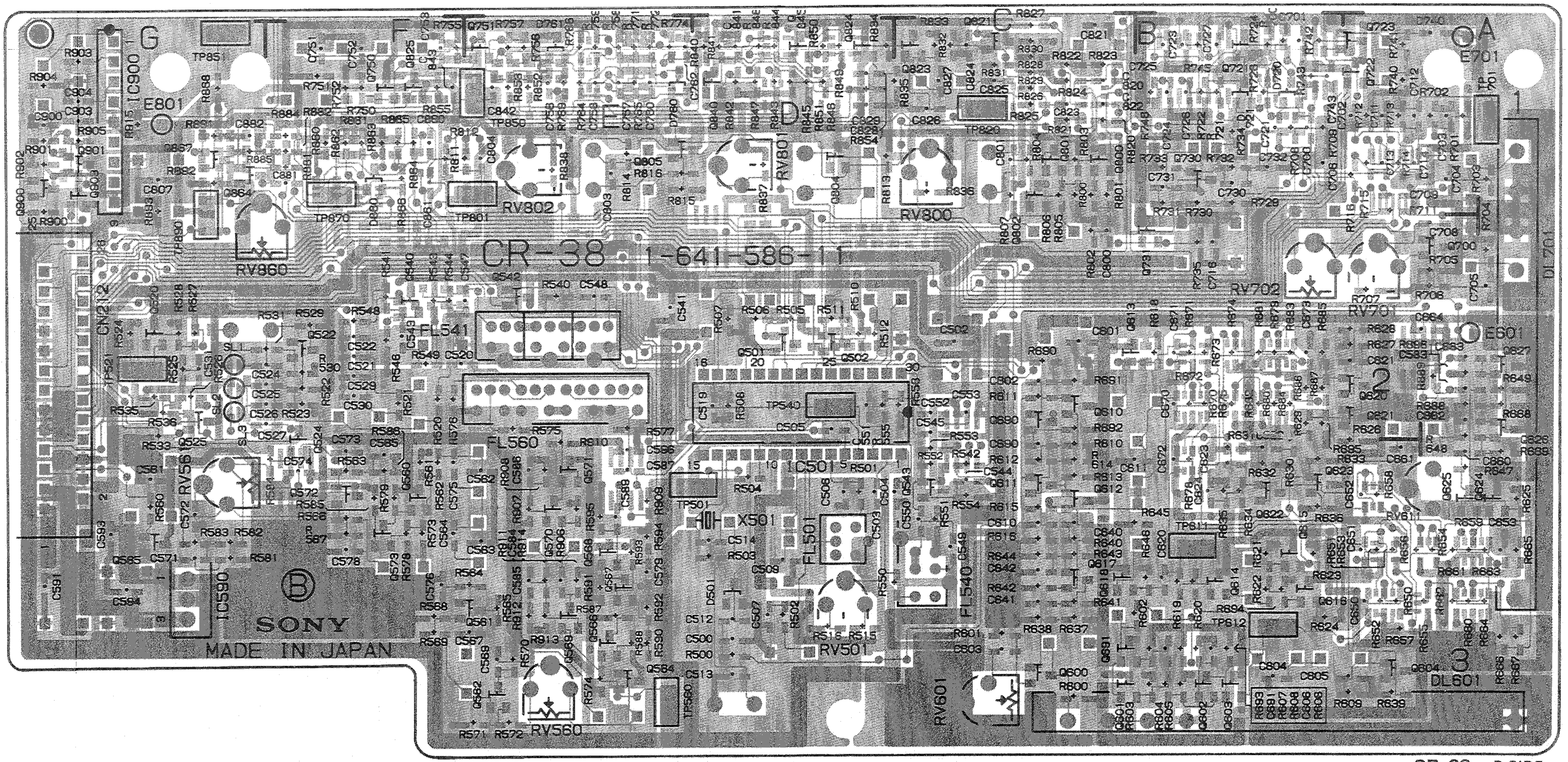
CR-38; CHROMA PROCESS

SVO-9500MD (J) : Serial No. 10001 to 10310
SVO-9500MD (UC): Serial No. 10001 to 11220

CR-38 (1-641-586-11)

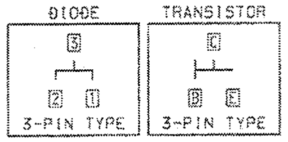
CN212	G-2
CV500	D-3
CV510	F-2
CV800	C-2
CV801	D-2
CV802	E-1
DL601	B-3
D501	D-3 *
D760	E-1 *
D761	E-1 *
D860	F-1 *
E601	A-2
E701	A-1
E801	G-1
FL501	D-3
FL540	C-3
FL541	E-2
FL560	E-2
IC501	D-3
IC540	C-3
IC560	F-3
IC561	E-3
IC590	G-3
IC601	A-2
IC703	E-1
IC900	G-1
Q500	D-2
Q501	D-2 *
Q502	D-2 *
Q520	G-2 *
Q521	G-2
Q522	F-2 *
Q523	G-2
Q524	F-2
Q525	G-3 *
Q540	F-2 *
Q541	F-2
Q542	E-2 *
Q543	C-3 *
Q560	F-3 *
Q561	E-3 *
Q562	E-3 *
Q564	E-3 *
Q565	G-3 *
Q566	E-3 *
Q567	E-3 *
Q568	E-3 *
Q569	E-3 *
Q570	E-3 *
Q571	E-3 *
Q572	F-3 *
Q573	F-3 *
Q600	C-3 *
Q601	C-3 *
Q602	B-3 *
Q603	B-3 *
Q604	A-3 *
Q610	C-2 *
Q611	C-3 *
Q612	C-3 *
Q613	C-2 *
Q614	B-3 *
Q615	B-3 *
Q616	B-3 *
Q617	C-3 *
Q618	C-3 *
Q620	A-2 *
Q621	A-2 *
Q622	B-3 *
Q623	B-3 *
Q624	A-3 *
Q625	A-3 *
Q626	A-3 *
Q627	A-2 *
Q650	A-3
Q651	A-3
Q652	A-3
Q653	A-3
Q654	A-3
Q655	A-3
Q656	A-3
Q670	B-2
Q671	B-2
Q672	B-2
Q673	B-2
Q674	B-3
Q675	B-2
Q676	B-2
Q690	C-2 *
Q691	C-3 *
Q730	B-1 *
Q731	B-1 *
Q750	F-1 *
Q751	E-1 *
Q752	E-1
Q753	E-2
Q754	E-1
Q755	E-1
Q756	D-1
Q800	C-1 *
Q801	C-1 *
Q802	C-2 *
Q803	C-2
Q804	D-1 *
Q805	E-1 *
Q806	E-2
Q807	E-1
Q820	C-1
Q821	C-1 *
Q822	C-1
Q823	C-1 *
Q824	D-1 *
Q840	D-1 *
Q841	D-1
Q842	D-1
Q843	D-1
Q844	D-1
Q845	D-1 *
Q860	F-1
Q861	F-1
Q862	F-2
Q863	F-1
Q864	G-1 *
Q865	F-1
Q866	G-1
Q867	G-1 *
Q868	G-2
Q900	G-1 *
Q901	G-1 *
Q902	G-1
Q903	G-1 *
RV501	D-3
RV560	E-3
RV561	G-3
RV601	C-3
RV611	A-3
RV800	C-1
RV801	D-1
RV802	E-1
RV860	F-2
TP501	E-3 *
TP521	G-2 *
TP540	D-2 *
TP560	E-3 *
TP611	B-3 *
TP612	B-3 *
TP801	E-1 *
TP820	C-1 *
TP850	E-1 *
TP851	G-1 *
TP870	F-1 *
TP890	G-1 *
X501	D-3

* mark; B SIDE mount


CR-38 1-641-586-11
SONY
MADE IN JAPAN
IC501
IC590
IC900
CN212
RV560
RV501
RV601
RV701
RV702
RV800
RV801
RV802
RV860
RV611
FL501
FL540
FL541
FL560
DL601
DL701
X501
E601
E701
E801
A
B
C
D
E
F
G
1
2
3

CR-38 B SIDE
1-641-586-11 (1)
SVO-9500MD

SURFACE MOUNT TYPE
DIODE/TRANSISTOR PIN LAYOUTS


DIODE
TRANSISTOR
3
2
1
C
B
E
3-PIN TYPE
3-PIN TYPE

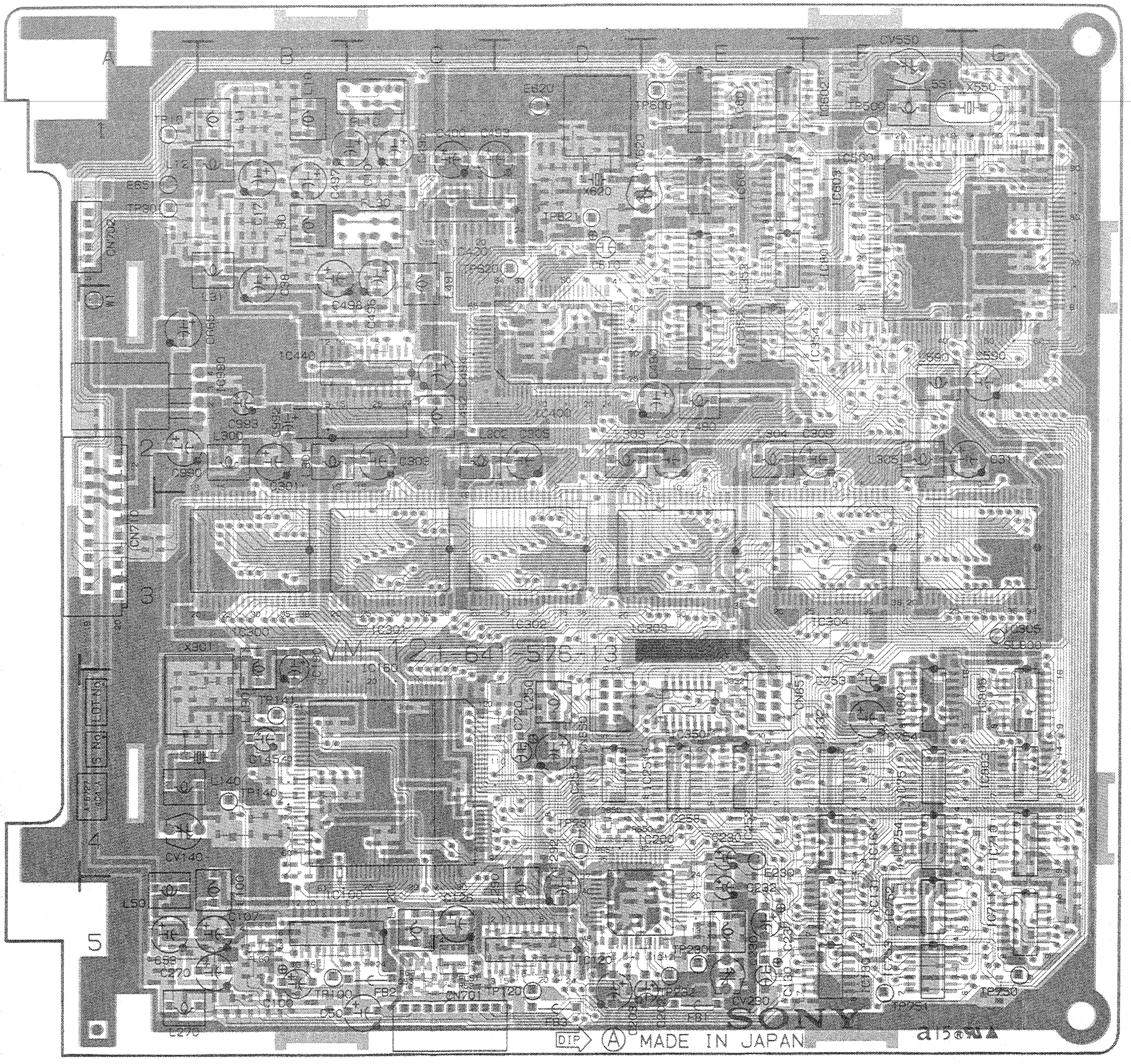
VM-12; Y/CHROMA NOISE REDUCER, VIDEO MEMORY, CHROMA DECODER/ENCODER

SVO-9500MD (J) : Serial No. 20001 and higher
SVO-9500MD (UC) : Serial No. 21201 and higher
SVO-9500MD4 (UC) : Serial No. 12201 and higher

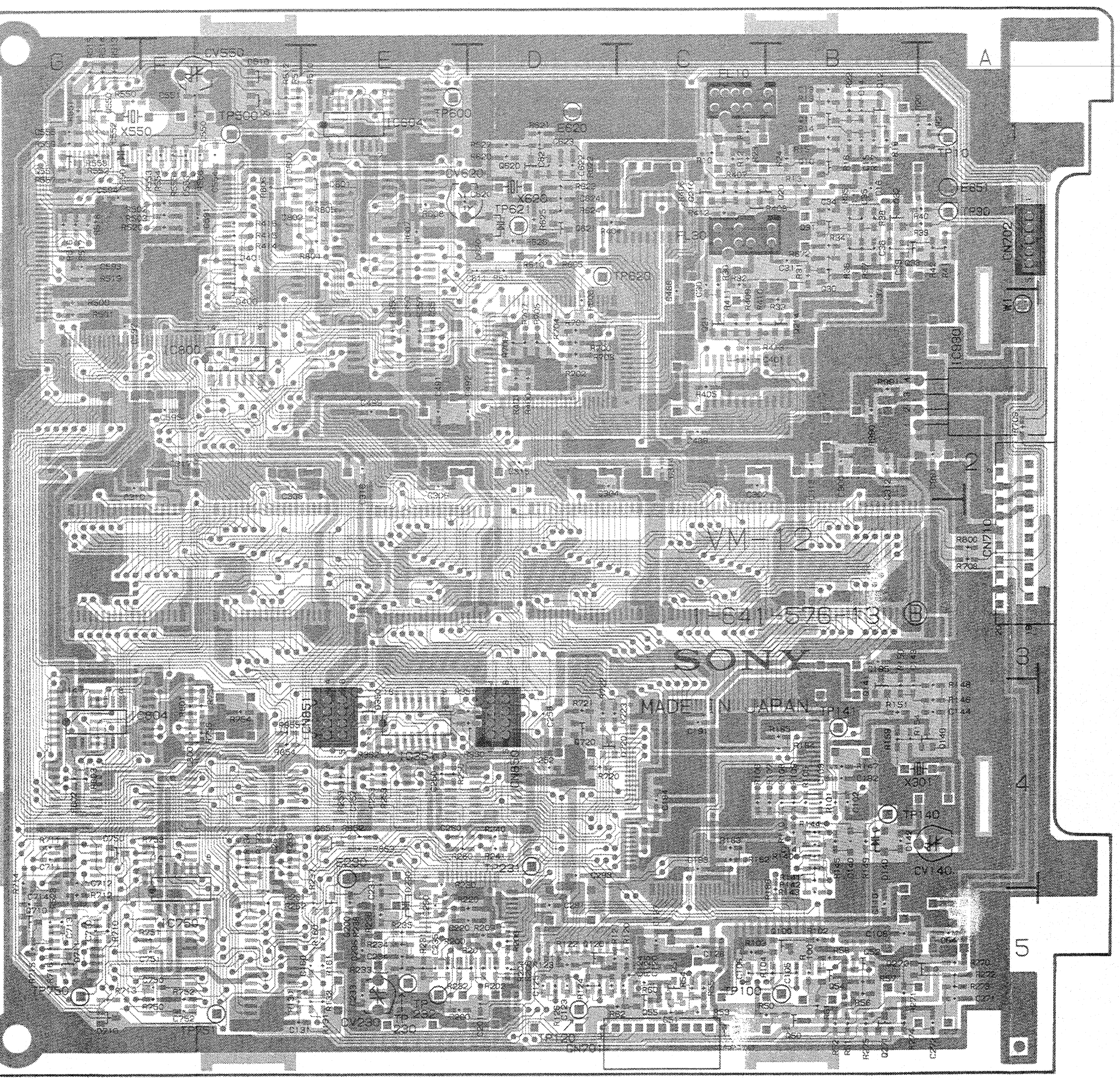
VM-12 (1-641-576-13)

CN701	C-5	IC800	F-2 *
CN702	A-1	IC801	F-1
CN710	A-3	IC802	F-4
		IC803	G-4
CV140	A-4	IC804	G-4 *
CV230	E-5	IC805	G-4
CV550	F-1	IC990	B-2
D140	B-4 *	Q10	B-1 *
D230	E-5 *	Q11	B-1 *
D400	F-2 *	Q12	B-1 *
D401	F-1 *	Q20	B-1 *
D510	F-1 *	Q21	C-2 *
D511	F-1 *	Q30	B-1 *
D710	G-5 *	Q31	B-1 *
D711	G-5 *	Q32	B-1 *
D720	C-4 *	Q33	B-1 *
D750	G-4 *	Q50	B-5 *
D800	F-1 *	Q51	C-5 *
D801	E-1 *	Q52	B-5 *
D802	F-1 *	Q53	C-5
		Q54	B-5 *
E230	E-4	Q55	C-5 *
E620	D-1	Q100	B-5 *
E651	A-1	Q120	D-5 *
		Q140	A-4 *
FB1	E-5	Q141	B-4 *
FB2	C-5	Q200	E-5 *
FB3	D-5	Q210	C-1 *
		Q214	B-2 *
FL10	C-1	Q270	B-5 *
FL30	C-1	Q271	B-5 *
FL50	B-5	Q550	G-1 *
FL51	C-5	Q551	G-1 *
		Q710	G-5 *
IC100	B-5	Q720	D-4 *
IC120	D-5		
IC130	F-5	SL800	G-3
IC131	F-5		
IC132	F-4	TP10	A-1
IC160	C-4	TP30	A-1
IC161	F-4	TP100	B-5
IC200	E-4	TP120	D-5
IC251	E-4	TP140	B-4
IC252	E-4	TP141	B-4
IC258	E-4	TP230	E-5
IC300	B-3	TP231	D-4
IC301	C-3	TP232	E-5
IC302	D-3	TP500	F-1
IC303	E-3	TP600	D-1
IC304	F-3	TP620	C-1
IC305	G-3	TP621	D-1
IC352	E-2	TP750	G-5
IC353	E-2	TP751	F-5
IC354	F-2		
IC400	D-2	X301	A-3
IC420	C-1	X550	G-1
IC440	B-2		
IC500	F-1		
IC710	G-4		
IC711	G-5		
IC750	F-5 *		
IC751	F-4		
IC752	F-5		
IC753	F-5		
IC754	F-4		

* mark ; B SIDE mount

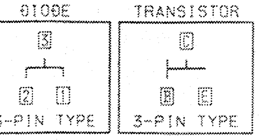

A
B
C
D
E
F
G
1
2
3
4
5
VM-12 1-641-576-13
SONY
DIP Ⓐ MADE IN JAPAN
CN702
CN710
CN701
IC300
IC301
IC302
IC303
IC304
IC305
IC400
IC440
X301
X550
CV140
CV230
CV550
TP10
TP30
TP500
TP600
TP621
TP750
TP751

VM-12/P A SIDE
1-641-576-13 (1)
SVO-9500MD
SVO-9500MD4
SVO-9500MDP


G
F
E
D
C
B
A
2
3
4
5
CV550
X550
TP500
IC504
TP600
E620
CV620
X620
TP620
FL10
FL30
TP10
E651
TP90
CN702
IC800
IC990
CN710
VM-12
1-641-576-13 Ⓑ
SONY
MADE IN JAPAN
TP141
X301
TP140
CV140
CN851
CN850
TP231
IC760
TP750
CV230
TP100
TP120
CN701

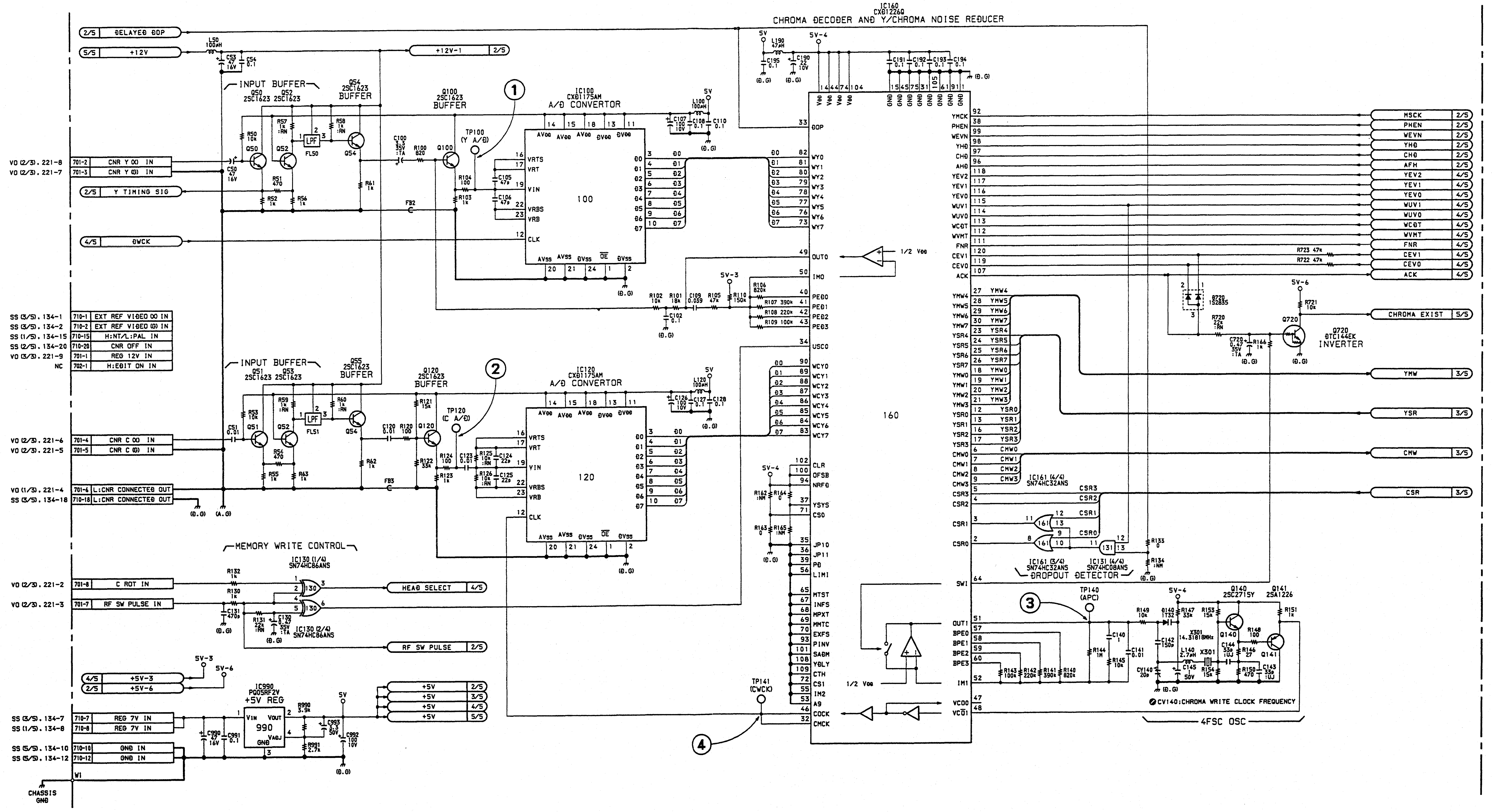
VM-12/P — **B SIDE** —
1-641-576-13 (1)
SVO-9500MD
SVO-9500MD4
SVO-9500MDP

SURFACE MOUNT TYPE
DE/TRANSISTOR PIN LAYOUTS


DIODE
TRANSISTOR
3
2
1
-PIN TYPE
C
B
E
3-PIN TYPE

VM-12 (1/5) ; Y/CHROMA A-D CONVERTERS, Y/CHROMA NOISE REDUCER

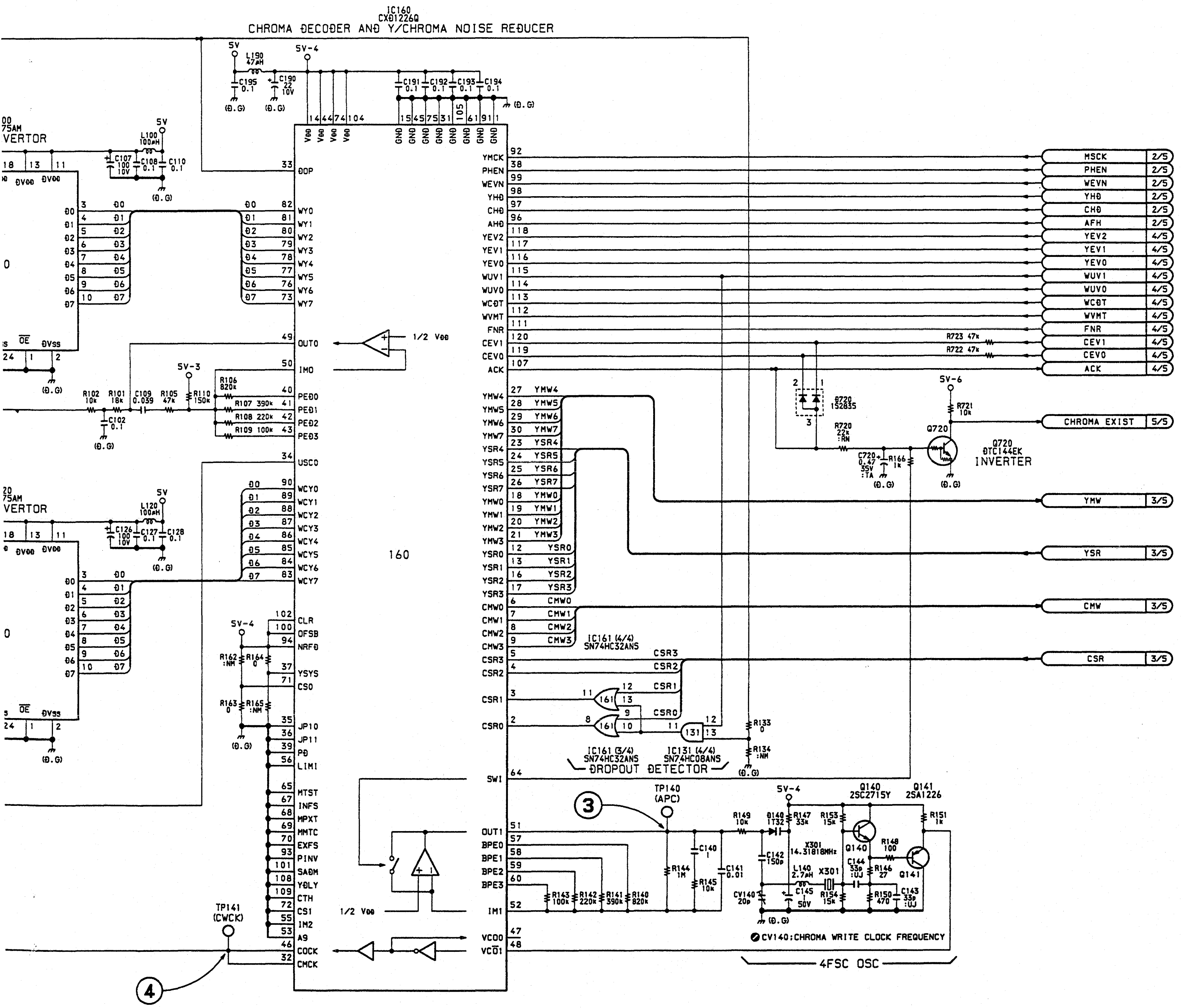
SVO-9500MD (J)	: Serial No. 20001 and higher
SVO-9500MD (UC)	: Serial No. 21201 and higher
SVO-9500MD4 (UC)	: Serial No. 12201 and higher


IC160 CXD1226Q CHROMA DECODER AND Y/CHROMA NOISE REDUCER
INPUT BUFFER
Q50 Q52 2SC1623 2SC1623
Q54 2SC1623 BUFFER
Q100 2SC1623 BUFFER
IC100 CXD1175AM A/D CONVERTOR
TP100 (Y A/D)
INPUT BUFFER
Q51 Q53 2SC1623 2SC1623
Q55 2SC1623 BUFFER
Q120 2SC1623 BUFFER
IC120 CXD1175AM A/D CONVERTOR
TP120 (C A/D)
MEMORY WRITE CONTROL
IC130 (1/4) SN74HC86ANS
IC130 (2/4) SN74HC86ANS
IC990 PQ05RF2V +5V REG
DELAYED DDP
+12V
+12V-1
CNR Y OO IN
CNR Y (G) IN
Y TIMING SIG
DWCK
EXT REF VIDEO (O) IN
EXT REF VIDEO (G) IN
H:NT/L:PAL IN
CNR OFF IN
REG 12V IN
H:EDIT ON IN
CNR C OO IN
CNR C (G) IN
L:CNR CONNECTED OUT
C ROT IN
RF SW PULSE IN
HEAD SELECT
RF SW PULSE
+5V-3
+5V-6
REG 7V IN
GND IN
CHASSIS GND
MSCK PHEN WEVN YHD CHD AFH YEV2 YEV1 YEV0 WUV1 WUV0 WCDT WVMT FNR CEV1 CEV0 ACK
CHROMA EXIST
YMW YSR CMW CSR
IC161 (4/4) SN74HC32ANS
IC161 (3/4) SN74HC32ANS
IC131 (4/4) SN74HC08ANS
DROPOUT DETECTOR
Q720 DTC144EK INVERTER
D720 1SS355
TP140 (APC)
Q140 2SC2715Y
Q141 2SA1226
X301 14.31818MHz
CV140:CHROMA WRITE CLOCK FREQUENCY
4FSC OSC
TP141 (CWCK)
1/2 VDD
① ② ③ ④

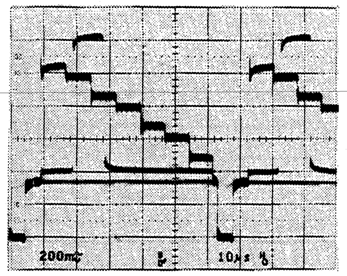
VI
1-641-
SVO-95
SVO-95
SVO-95

Board L

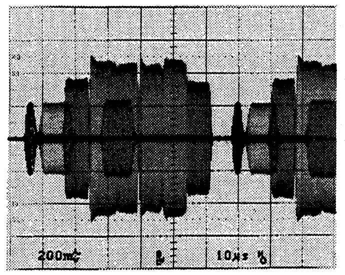
A | B | C | D | E | F | G | H


IC160
CX01226Q
CHROMA DECODER AND Y/CHROMA NOISE REDUCER
160
5V
5V-4
5V-3
5V-6
VERTOR
MSCK
PHEN
WEVN
YHD
CHD
AFH
YEV2
YEV1
YEV0
WUV1
WUV0
WCDT
WVMT
FNR
CEV1
CEV0
ACK
CHROMA EXIST
YMW
YSR
CMW
CSR
2/5
4/5
5/5
3/5
D720
1SS226
Q720
DTC144EK
INVERTER
IC161 (4/4)
SN74HC32ANS
IC161 (3/4)
SN74HC32ANS
IC131 (4/4)
SN74HC08ANS
DROPOUT DETECTOR
TP140
(APC)
TP141
(CWCK)
Q140
2SC2715Y
Q141
2SA1226
X301
14.31818MHz
CV140:CHROMA WRITE CLOCK FREQUENCY
4FSC OSC
1/2 VDD
③
④
(D.G)

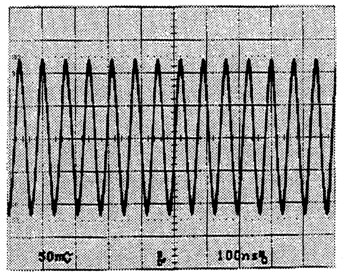
① TP100 (B-5) PB mode



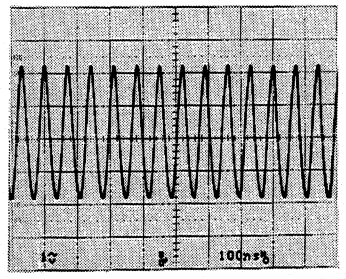
② TP120 (D-5) PB mode



③ TP140 (B-4)



④ TP141 (B-4)



Measurement Condition

PB mode: KRV-45HNS or KRV-51HN

VM-12 (1/5)

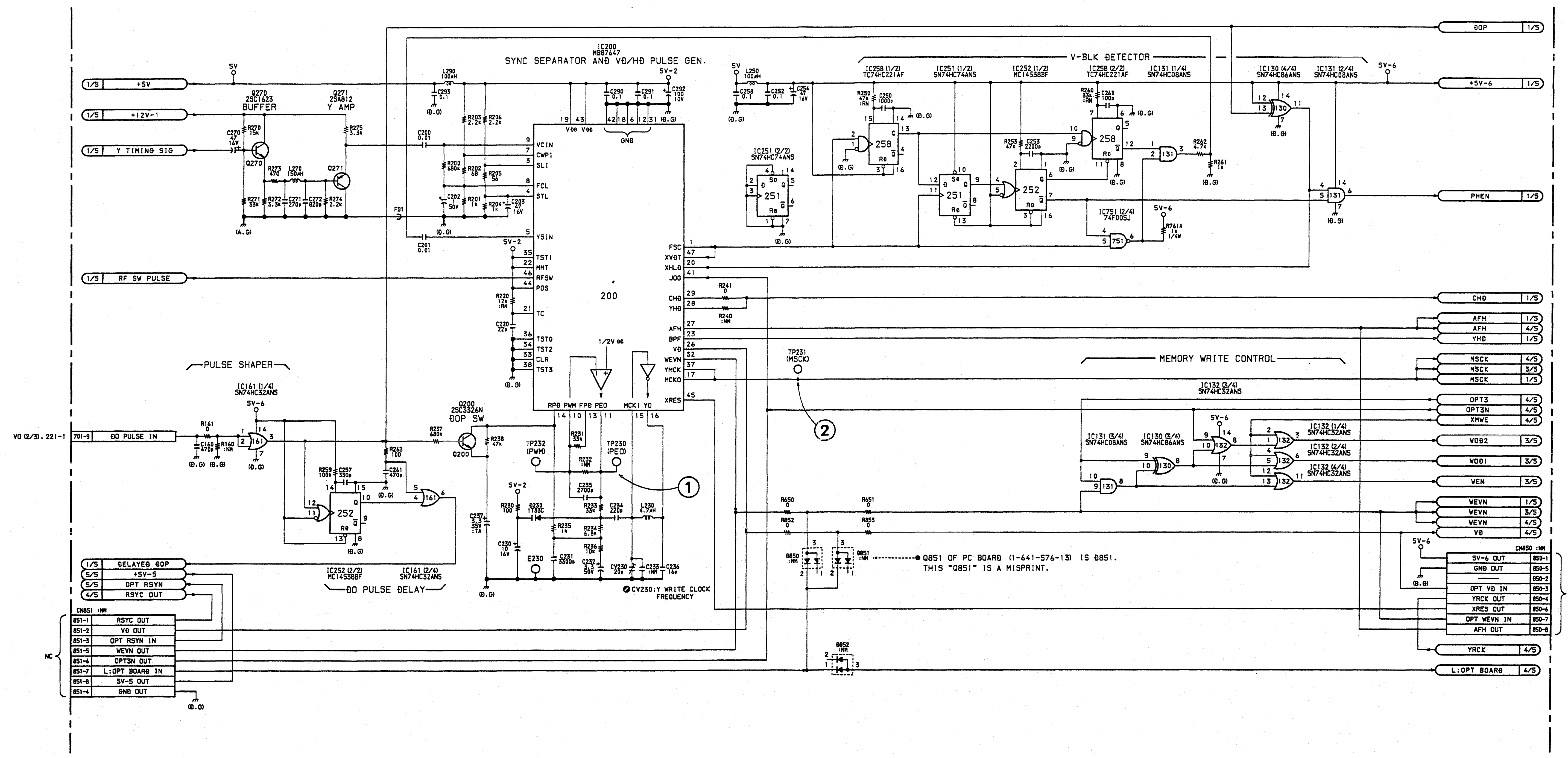
1-641-576-13 (1)
SVO-9500MD (J) : #20001-
SVO-9500MD (UC) : #21201-
SVO-9500MD4 (UC) : #12201-

Board Layout....Page 13-24

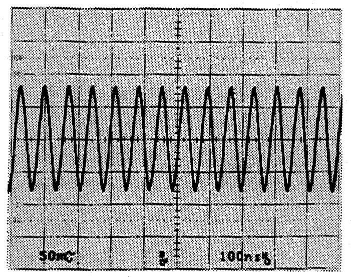
VM-12 (2/5)

VM-12 (2/5); SYNC SEPARATOR, VD/HD PULSE GENERATOR

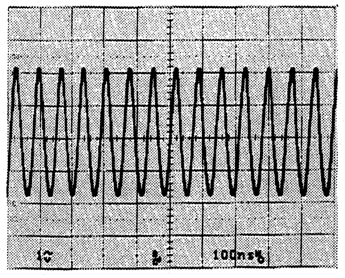
SVO-9500MD (J)	: Serial No. 20001 and higher
SVO-9500MD (UC)	: Serial No. 21201 and higher
SVO-9500MD4 (UC)	: Serial No. 12201 and higher


IC200 MB87647
SYNC SEPARATOR AND VD/HD PULSE GEN.
5V-2
Q270 2SC1623 BUFFER
Q271 2SA812 Y AMP
1/5 +5V
1/5 +12V-1
1/5 Y TIMING SIG
1/5 RF SW PULSE
VCIN
CWP1
SLI
FCL
STL
YSIN
TST1
MMT
RFSW
POS
TC
TST0
TST2
CLR
TST3
FSC
XVDT
XHLD
JOG
CHD
YHD
AFH
BPF
VD
WEVN
YMCK
MCKO
XRES
RPD PWM FPD PEO MCKI YO
VDD VDD
GND
200
1/2V DD
VD (2/3). 221-1
701-9 DD PULSE IN
PULSE SHAPER
IC161 (1/4) SN74HC32ANS
5V-6
DD PULSE DELAY
IC252 (2/2) MC14538BF
IC161 (2/4) SN74HC32ANS
Q200 2SC3326N DDP SW
TP232 (PWM)
TP230 (PEO)
TP231 (MSCK)
①
②
E230
CV230:Y WRITE CLOCK FREQUENCY
V-BLK DETECTOR
IC258 (1/2) TC74HC221AF
IC251 (1/2) SN74HC74ANS
IC252 (1/2) MC14538BF
IC258 (2/2) TC74HC221AF
IC131 (1/4) SN74HC08ANS
IC130 (4/4) SN74HC86ANS
IC131 (2/4) SN74HC08ANS
IC251 (2/2) SN74HC74ANS
IC751 (2/4) 74F00SJ
MEMORY WRITE CONTROL
IC132 (3/4) SN74HC32ANS
IC131 (3/4) SN74HC08ANS
IC130 (3/4) SN74HC86ANS
IC132 (1/4) SN74HC32ANS
IC132 (2/4) SN74HC32ANS
IC132 (4/4) SN74HC32ANS
DDP 1/5
+5V-6 1/5
PHEN 1/5
CHD 1/5
AFH 1/5
AFH 4/5
YHD 1/5
MSCK 4/5
MSCK 3/5
MSCK 1/5
OPT3 4/5
OPT3N 4/5
XMWE 4/5
WDB2 3/5
WDB1 3/5
WEN 3/5
WEVN 1/5
WEVN 3/5
WEVN 4/5
VD 4/5
YRCK 4/5
L:OPT BOARD 4/5
CN850 :NM
5V-6 OUT 850-1
GND OUT 850-5
850-2
OPT VD IN 850-3
YRCK OUT 850-4
XRES OUT 850-6
OPT WEVN IN 850-7
AFH OUT 850-8
NC
1/5 DELAYED DDP
5/5 +5V-5
5/5 OPT RSYN
4/5 RSYC OUT
CN851 :NM
851-1 RSYC OUT
851-2 VD OUT
851-3 OPT RSYN IN
851-5 WEVN OUT
851-6 OPT3N OUT
851-7 L:OPT BOARD IN
851-8 5V-5 OUT
851-4 GND OUT
NC
R650 0
R651 0
R852 0
R853 0
D850 :NM
D851 :NM
Q851 OF PC BOARD (1-641-576-13) IS D851.
THIS "Q851" IS A MISPRINT.
D852 :NM
(D.G)
(A.G)
1
2
3
4
5

① TP230 (E-5)



② TP231 (D-4)



VM-12 (2/5)

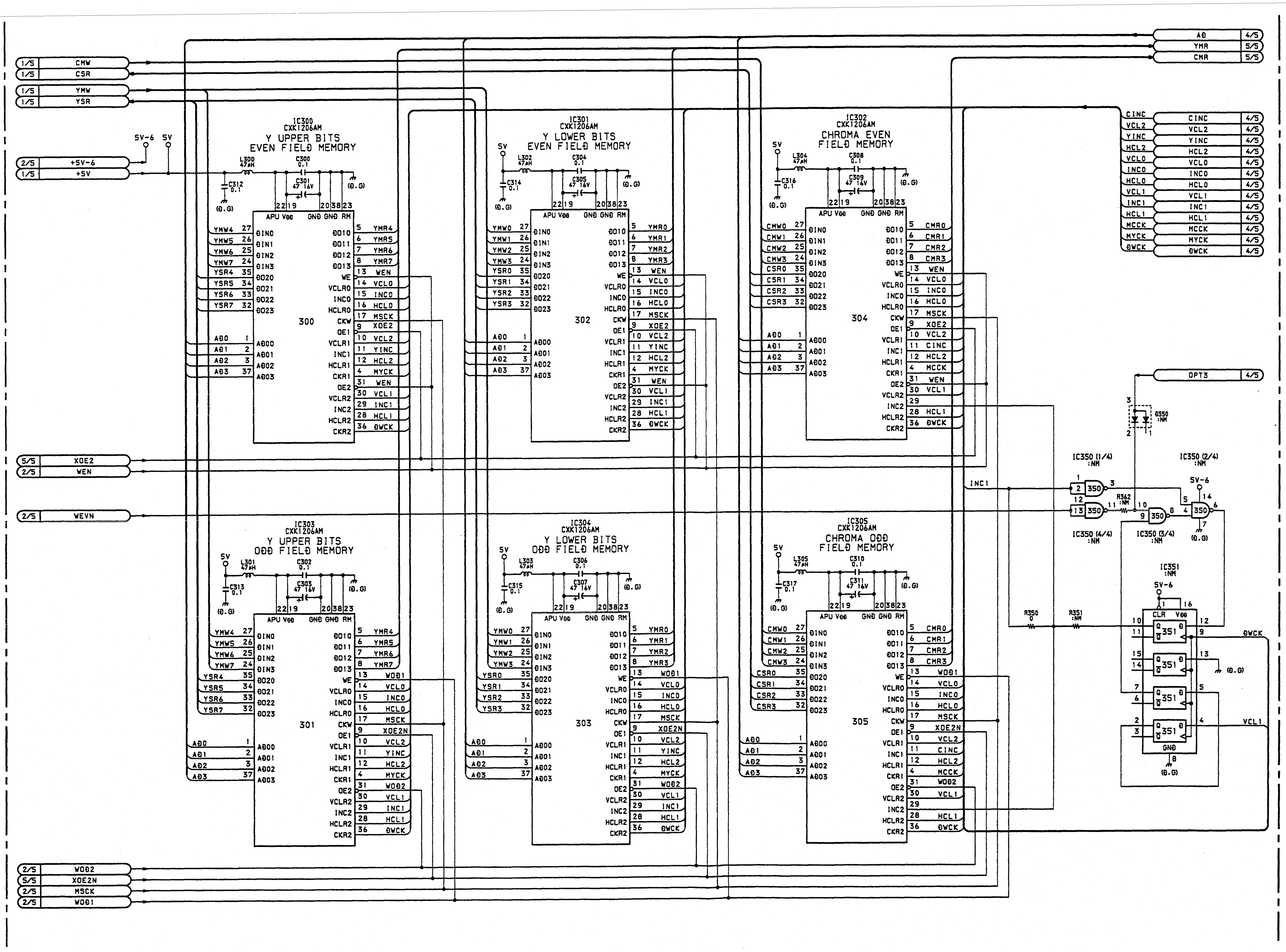
1-641-576-13 (1)
SVO-9500MD (J) : #20001-
SVO-9500MD (UC) : #21201-
SVO-9500MD4 (UC) : #12201-

Board Layout....Page 13-24

13-27

VM-12 (3/5); Y/CHROMA T-I ELD MEMORIES

SVO-9500MD (J) : Serial No. 20001 and higher
SVO-9500MD (UC) : Serial No. 21201 and higher
SVO-9500MD4 (UC) : Serial No. 12201 and higher



1/5 CMW
1/5 CSR
1/5 YMW
1/5 YSR
2/5 +5V-6
1/5 +5V
5/5 XOE2
2/5 WEN
2/5 WEVN
2/5 WOB2
5/5 XOE2N
2/5 MSCK
2/5 WOB1
AB 4/5
YMR 5/5
CMR 5/5
CINC 4/5
VCL2 4/5
YINC 4/5
HCL2 4/5
VCLO 4/5
INCO 4/5
HCLO 4/5
VCL1 4/5
INC1 4/5
HCL1 4/5
MCCK 4/5
MYCK 4/5
BWCK 4/5
OPT3 4/5
IC300 CXK1206AM Y UPPER BITS EVEN FIELD MEMORY
IC301 CXK1206AM Y LOWER BITS EVEN FIELD MEMORY
IC302 CXK1206AM CHROMA EVEN FIELD MEMORY
IC303 CXK1206AM Y UPPER BITS ODD FIELD MEMORY
IC304 CXK1206AM Y LOWER BITS ODD FIELD MEMORY
IC305 CXK1206AM CHROMA ODD FIELD MEMORY
5V-6
5V
L300 47μH
L301 47μH
L302 47μH
L303 47μH
L304 47μH
L305 47μH
C300 0.1
C301 47 16V
C302 0.1
C303 47 16V
C304 0.1
C305 47 16V
C306 0.1
C307 47 16V
C308 0.1
C309 47 16V
C310 0.1
C311 47 16V
C312 0.1
C313 0.1
C314 0.1
C315 0.1
C316 0.1
C317 0.1
(D.G)
APU VDD GND GND RM
300
301
302
303
304
305
INC1
IC350 (1/4) :NM
IC350 (2/4) :NM
IC350 (3/4) :NM
IC350 (4/4) :NM
R362 :NM
D350 :NM
R350 0
R351 :NM
IC351 :NM
CLR VDD
GND
BWCK
VCL1
1
2
3
4
5
A
B
C
D
E
F
G
H

VM-12 (3/5)

1-641-576-13 (1)
SVO-9500MD (J) : # 20001-
SVO-9500MD (UC) : # 21201-
SVO-9500MD4 (UC) : # 12201-

Board Layout....Page 13-24

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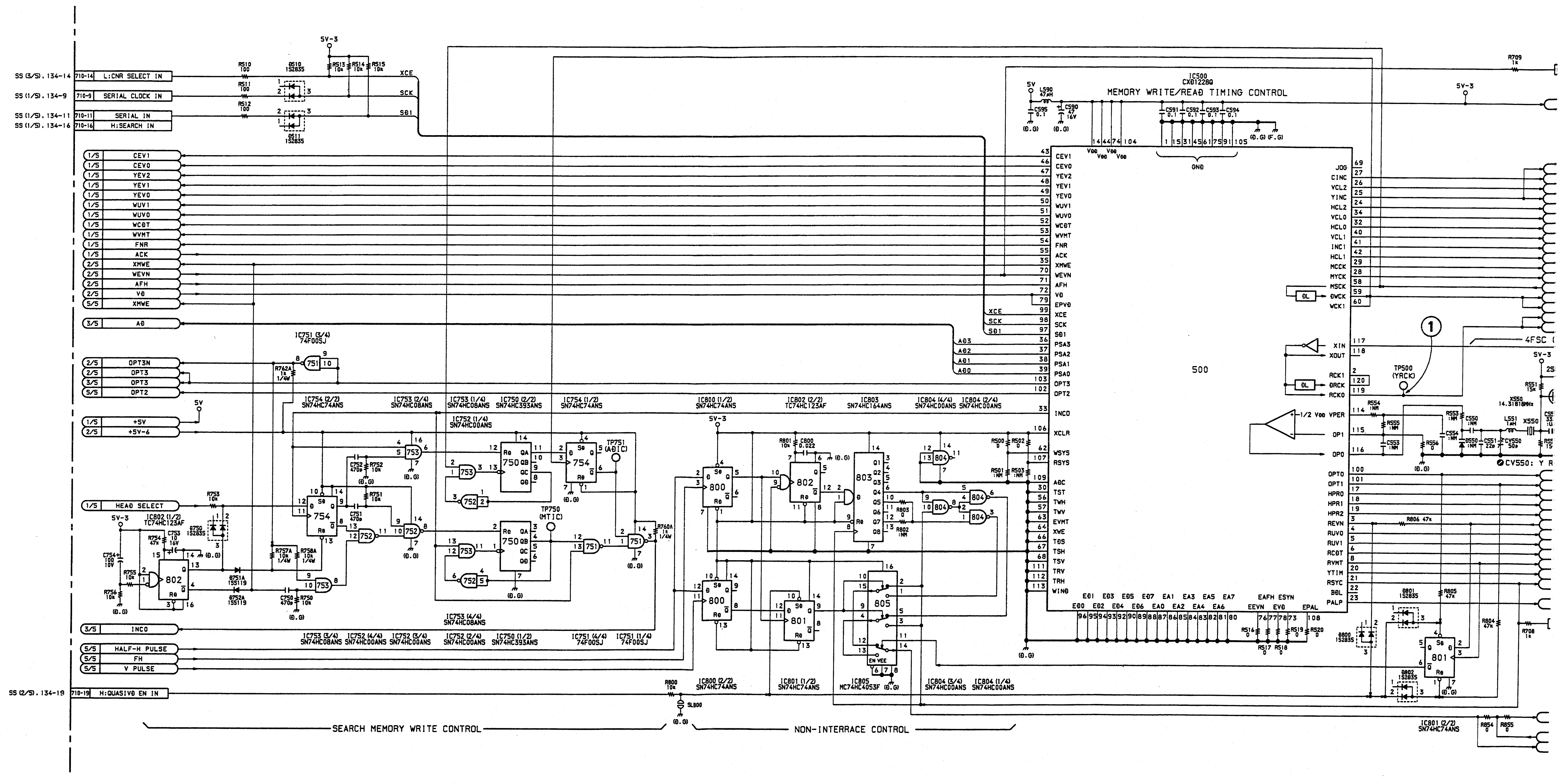
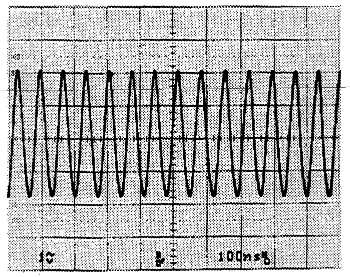
VM-12 (4/5); MEMORY WRITE/READ TIMING CONTROL

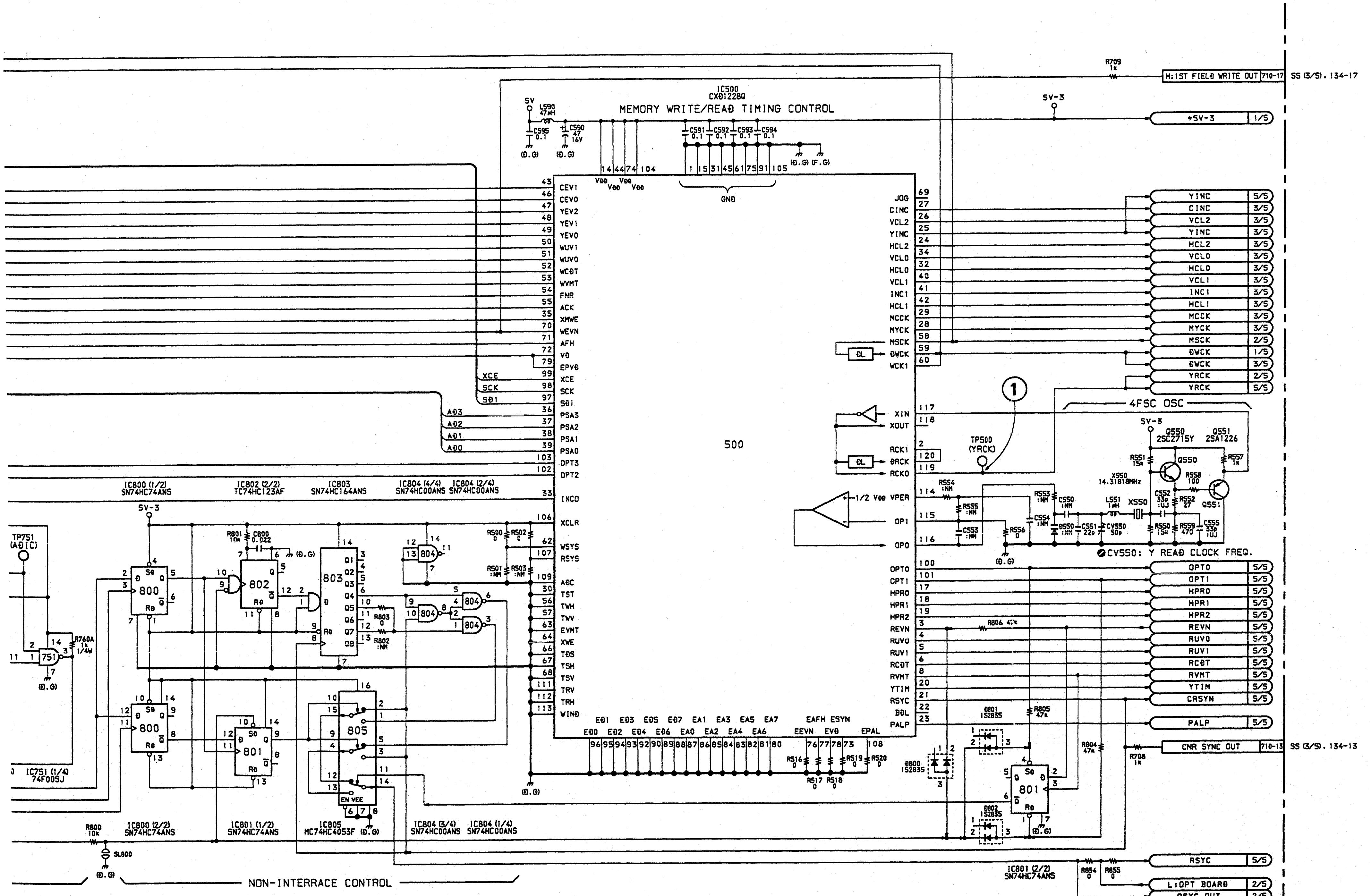
SVO-9500MD (J) : Serial No. 20001 and higher
SVO-9500MD (UC) : Serial No. 21201 and higher
SVO-9500MD4 (UC): Serial No. 12201 and higher



IC500
CXD1228Q
MEMORY WRITE/READ TIMING CONTROL
500
L:CNR SELECT IN
SERIAL CLOCK IN
SERIAL IN
H:SEARCH IN
CEV1
CEV0
YEV2
YEV1
YEV0
WUV1
WUV0
WCØT
WVMT
FNR
ACK
XMWE
WEVN
AFH
VØ
XMWE
AØ
OPT3N
OPT3
OPT3
OPT2
+5V
+5V-6
HEAD SELECT
INCO
HALF-H PULSE
FH
V PULSE
H:QUASIVØ EN IN
XCE
SCK
SØ1
5V-3
TP750 (MTIC)
TP751 (AØ(C))
TP500 (YRCK)
IC751 (3/4) 74F00SJ
IC754 (2/2) SN74HC74ANS
IC753 (2/4) SN74HC08ANS
IC753 (1/4) SN74HC08ANS
IC750 (2/2) SN74HC393ANS
IC754 (1/2) SN74HC74ANS
IC752 (1/4) SN74HC00ANS
IC800 (1/2) SN74HC74ANS
IC802 (2/2) TC74HC123AF
IC803 SN74HC164ANS
IC804 (4/4) SN74HC00ANS
IC804 (2/4) SN74HC00ANS
IC802 (1/2) TC74HC123AF
IC753 (4/4) SN74HC08ANS
IC753 (3/4) SN74HC08ANS
IC752 (4/4) SN74HC00ANS
IC752 (3/4) SN74HC00ANS
IC752 (2/4) SN74HC00ANS
IC750 (1/2) SN74HC393ANS
IC751 (4/4) 74F00SJ
IC751 (1/4) 74F00SJ
IC800 (2/2) SN74HC74ANS
IC801 (1/2) SN74HC74ANS
IC805 MC74HC4053F
IC804 (3/4) SN74HC00ANS
IC804 (1/4) SN74HC00ANS
IC801 (2/2) SN74HC74ANS
SEARCH MEMORY WRITE CONTROL
NON-INTERRACE CONTROL
JOG
CINC
VCL2
YINC
HCL2
VCLØ
HCLØ
VCL1
INC1
HCL1
MCCK
MYCK
MSCK
ØWCK
WCK1
XIN
XOUT
RCK1
ØRCK
RCKØ
VPER
OP1
OPØ
OPTØ
OPT1
HPRØ
HPR1
HPR2
REVN
RUVØ
RUV1
RCØT
RVMT
YTIM
RSYC
BBL
PALP
INCO
XCLR
WSYS
RSYS
AØC
TST
TWH
TWV
EVMT
XWE
TØS
TSH
TSV
TRV
TRH
WIND
4FSC
GND
XS550 14.31818MHz
CV550
SS (3/5). 134-14
SS (1/5). 134-9
SS (1/5). 134-11
SS (1/5). 134-16
SS (2/5). 134-19
①

① TP500 (F-1)




IC500
CX01228Q
MEMORY WRITE/READ TIMING CONTROL
5V
L590 47μH
C595 0.1
C590 47 16V
(D.G)
C591 0.1
C592 0.1
C593 0.1
C594 0.1
(D.G) (F.G)
GND
500
CEV1
CEVO
YEV2
YEV1
YEVO
WJV1
WJVO
WCDT
WVMT
FNR
ACK
XMWE
WEVN
AFH
VD
EPVD
XCE
SCK
SDI
PSA3
PSA2
PSA1
PSA0
OPT3
OPT2
INCO
XCLR
WSYS
RSYS
AOC
TST
TWH
TWV
EVMT
XWE
TDS
TSH
TSV
TRV
TRH
WIND
JOG
CINC
VCL2
YINC
HCL2
VCL0
HCL0
VCL1
INC1
HCL1
MCCK
MYCK
MSCK
ØWCK
WCK1
XIN
XOUT
RCK1
ØRCK
RCKO
1/2 VDD VPER
OP1
OPO
OPTO
OPT1
HPRO
HPR1
HPR2
REVN
RUVO
RUV1
RCDT
RVMT
YTIM
RSYC
BDL
PALP
DL
R709 1k
H:1ST FIELD WRITE OUT 710-17 SS (3/5). 134-17
5V-3
+5V-3 1/5
YINC 5/5
CINC 3/5
VCL2 3/5
YINC 3/5
HCL2 3/5
VCLO 3/5
HCLO 3/5
VCL1 3/5
INC1 3/5
HCL1 3/5
MCCK 3/5
MYCK 3/5
MSCK 2/5
ØWCK 1/5
ØWCK 3/5
YRCK 2/5
YRCK 5/5
①
4FSC OSC
TP500 (YRCK)
Q550 2SC2715Y
Q551 2SA1226
X550 14.31818MHz
L551
CV550 50p
ØCV550: Y READ CLOCK FREQ.
OPTO 5/5
OPT1 5/5
HPRO 5/5
HPR1 5/5
HPR2 5/5
REVN 5/5
RUVO 5/5
RUV1 5/5
RCDT 5/5
RVMT 5/5
YTIM 5/5
CRSYN 5/5
PALP 5/5
CNR SYNC OUT 710-13 SS (3/5). 134-13
R806 47k
R805 47k
R804 47k
R708 1k
D801 1SS355
D802 1SS355
D800 1SS355
801
IC801 (2/2) SN74HC74ANS
RSYC 5/5
R854 0
R855 0
L:OPT BOARD 2/5
RSYC OUT 2/5
IC800 (1/2) SN74HC74ANS
IC802 (2/2) TC74HC123AF
IC803 SN74HC164ANS
IC804 (4/4) SN74HC00ANS
IC804 (2/4) SN74HC00ANS
5V-3
TP751 (ADC)
800
802
803
804
805
R801 10k
C800 0.022
R803 0
R802 :NM
R760A 1k 1/4W
751
IC751 (1/4) 74F00SJ
IC800 (2/2) SN74HC74ANS
IC801 (1/2) SN74HC74ANS
IC805 MC74HC4053F
IC804 (3/4) SN74HC00ANS
IC804 (1/4) SN74HC00ANS
R800 10k
SL800
(D.G)
NON-INTERRACE CONTROL
ED0 ED1 ED2 ED3 ED4 ED5 ED6 ED7 EA0 EA1 EA2 EA3 EA4 EA5 EA6 EA7
EEVN EVD EAFH ESYN EPAL
R516 R517 R518 R519 R520

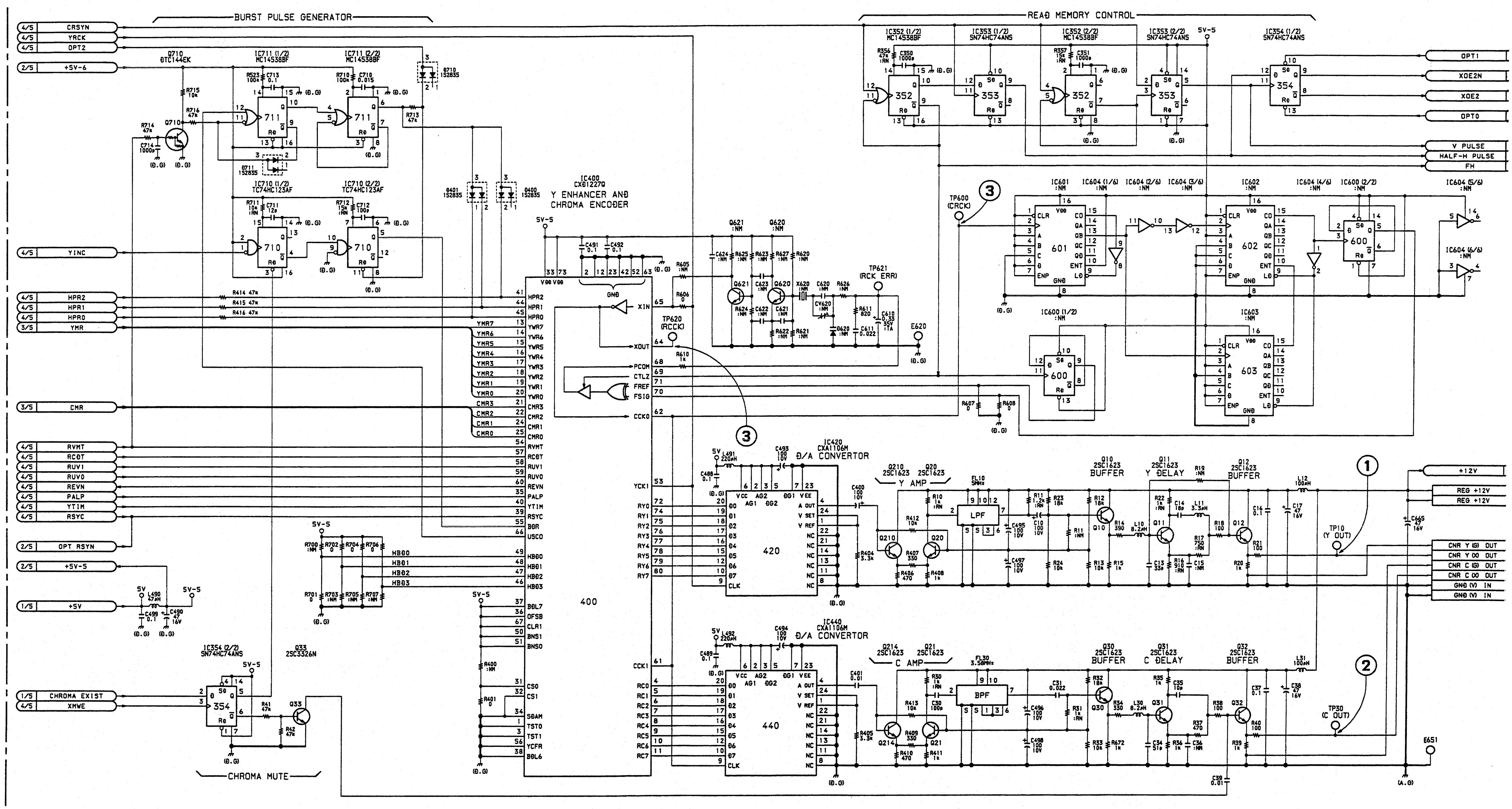
VM-12 (4/5)

1-641-576-13 (1)
SVO-9500MD (J) : #20001-
SVO-9500MD (UC) : #21201-
SVO-9500MD4 (UC) : #12201-

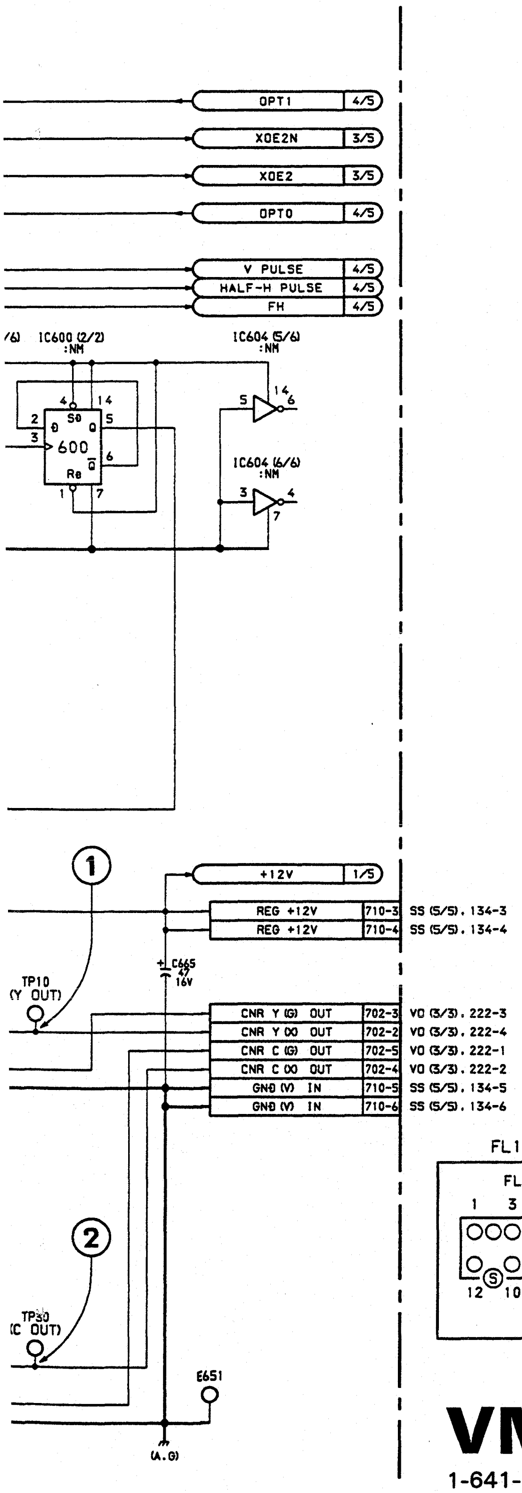
Board Layout....Page 13-24

VM-12 (5/5); Y ENHANCER, CHROMA ENCORDER, Y/CHROMA D-A CONVERTERS

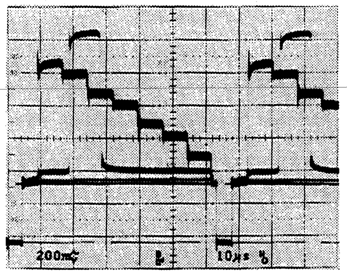
SVO-9500MD (J) : Serial No. 20001 and higher
SVO-9500MD (UC) : Serial No. 21201 and higher
SVO-9500MD4 (UC): Serial No. 12201 and higher


BURST PULSE GENERATOR
READ MEMORY CONTROL
CRSYN
YRCK
OPT2
+5V-6
YINC
HPR2
HPR1
HPR0
YMR
CMR
RVMT
RCOT
RUV1
RUV0
REVN
PALP
YTIM
RSYC
OPT RSYN
+5V-5
+5V
CHROMA EXIST
XMWE
Q710 DTC144EK
IC711 (1/2) MC14538BF
IC711 (2/2) MC14538BF
IC710 (1/2) TC74HC123AF
IC710 (2/2) TC74HC123AF
D710 1S2835
D711 1S2835
D401 1S2835
D400 1S2835
IC400 CX61227Q
Y ENHANCER AND CHROMA ENCODER
400
Q621 :NM
Q620 :NM
TP620 (RCCK)
TP621 (RCK ERR)
E620
TP600 (CRCK)
IC352 (1/2) MC14538BF
IC353 (1/2) SN74HC74ANS
IC352 (2/2) MC14538BF
IC353 (2/2) SN74HC74ANS
IC354 (1/2) SN74HC74ANS
OPT1
XOE2N
XOE2
OPT0
V PULSE
HALF-H PULSE
FH
IC601 :NM
IC602 :NM
IC603 :NM
IC600 (1/2) :NM
IC600 (2/2) :NM
IC604 :NM
IC420 CXA1106M
D/A CONVERTOR
420
Q210 2SC1623
Q20 2SC1623
Y AMP
FL10 5MHz
LPF
Q10 2SC1623 BUFFER
Q11 2SC1623 Y DELAY
Q12 2SC1623 BUFFER
TP10 (Y OUT)
+12V
REG +12V
REG +12V
CNR Y (G) OUT
CNR Y (X) OUT
CNR C (G) OUT
CNR C (X) OUT
GND (V) IN
GND (V) IN
IC440 CXA1106M
D/A CONVERTOR
440
Q214 2SC1623
Q21 2SC1623
C AMP
FL30 3.58MHz
BPF
Q30 2SC1623 BUFFER
Q31 2SC1623 C DELAY
Q32 2SC1623 BUFFER
TP30 (C OUT)
E651
IC354 (2/2) SN74HC74ANS
Q33 2SC3326N
CHROMA MUTE
(D.G)
(A.G)
①
②
③

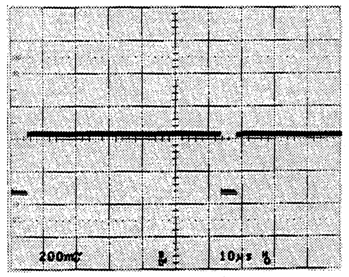
A | B | C | D | E | F | G | H |


OPT1 4/5
XOE2N 3/5
XOE2 3/5
OPT0 4/5
V PULSE 4/5
HALF-H PULSE 4/5
FH 4/5
IC600 (2/2) :NM
IC604 (5/6) :NM
IC604 (6/6) :NM
600
+12V 1/5
REG +12V 710-3 SS (5/5). 134-3
REG +12V 710-4 SS (5/5). 134-4
C665 47 16V
TP10 (Y OUT)
CNR Y (G) OUT 702-3 VO (3/3). 222-3
CNR Y (X) OUT 702-2 VO (3/3). 222-4
CNR C (G) OUT 702-5 VO (3/3). 222-1
CNR C (X) OUT 702-4 VO (3/3). 222-2
GND (V) IN 710-5 SS (5/5). 134-5
GND (V) IN 710-6 SS (5/5). 134-6
①
②
TP30 (C OUT)
E651
(A.G)

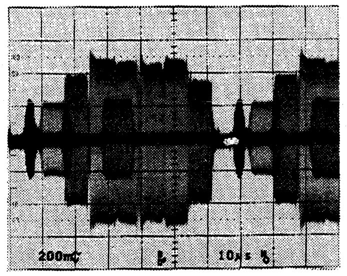
① TP10 (A-1) PB mode



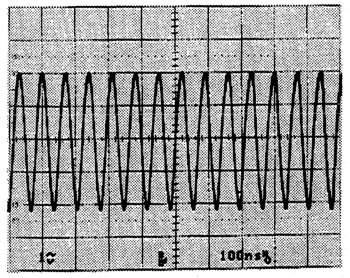
TP10 (A-1) STOP (E-E) mode



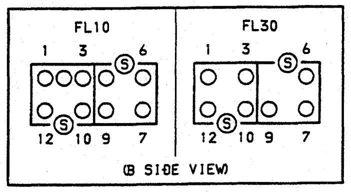
② TP30 (A-1) PB mode



③ TP600 (D-1)
TP620 (C-1)



FL10, FL30 PIN LAYOUTS


FL10
FL30
1 3 6
12 10 9 7
S
(B SIDE VIEW)

Measurement Condition

PB mode: KRV-45HNS or KRV-51HN

STOP (E-E) mode: S-VHS

VM-12 (5/5)

1-641-576-13 (1)
SVO-9500MD (J) : #20001-
SVO-9500MD (UC) : #21201-
SVO-9500MD4 (UC) : #12201-

Board Layout....Page 13-24

VM-12 ; Y/CHROMA NOISE REDUCER, VIDEO MEMORY, CHROMA DECODER/ENCODER

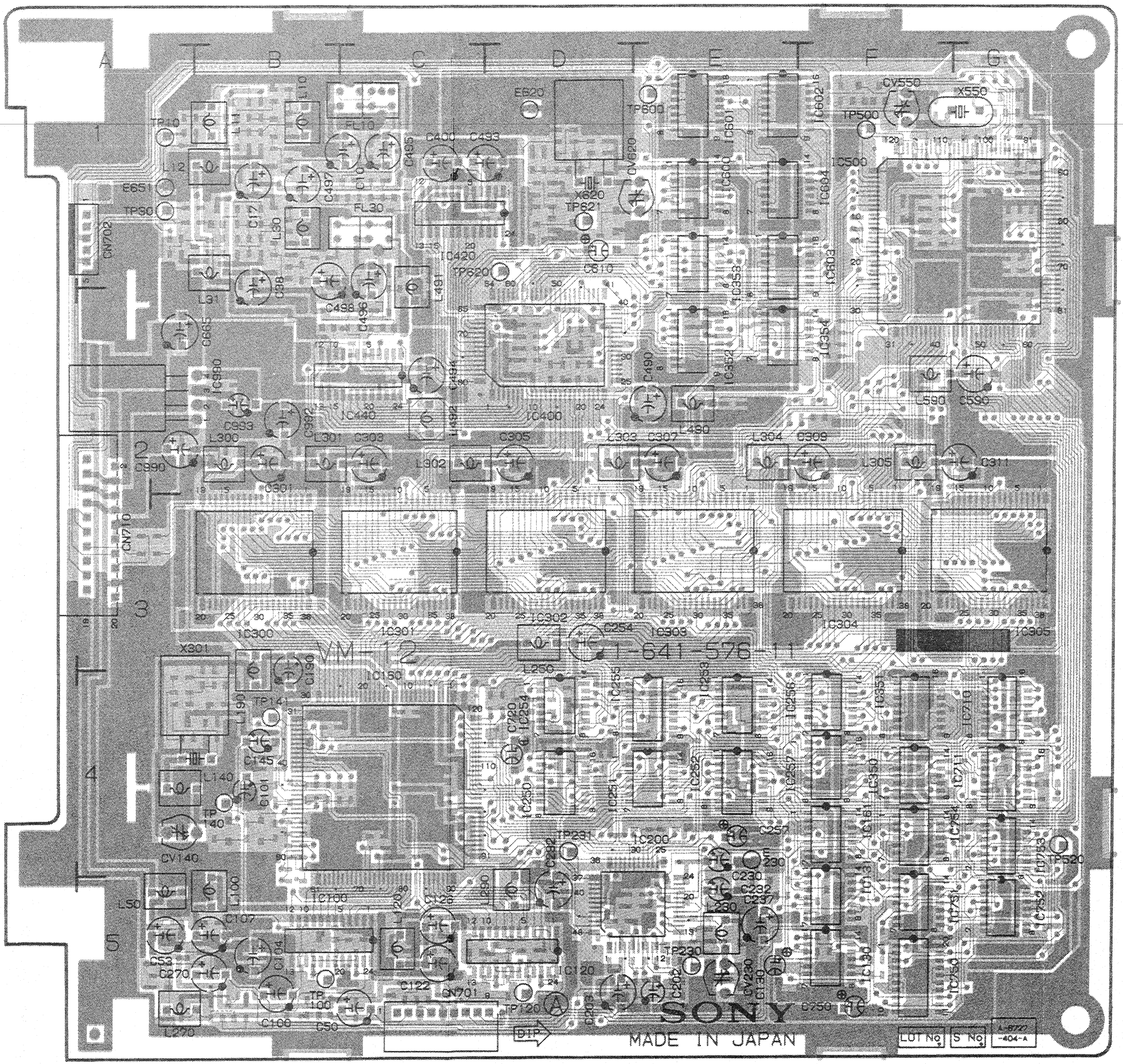
SVO-9500MD (J) : Serial No. 10001 to 10310
SVO-9500MD (UC) : Serial No. 10001 to 11620

VM-12 (1-641-576-11)

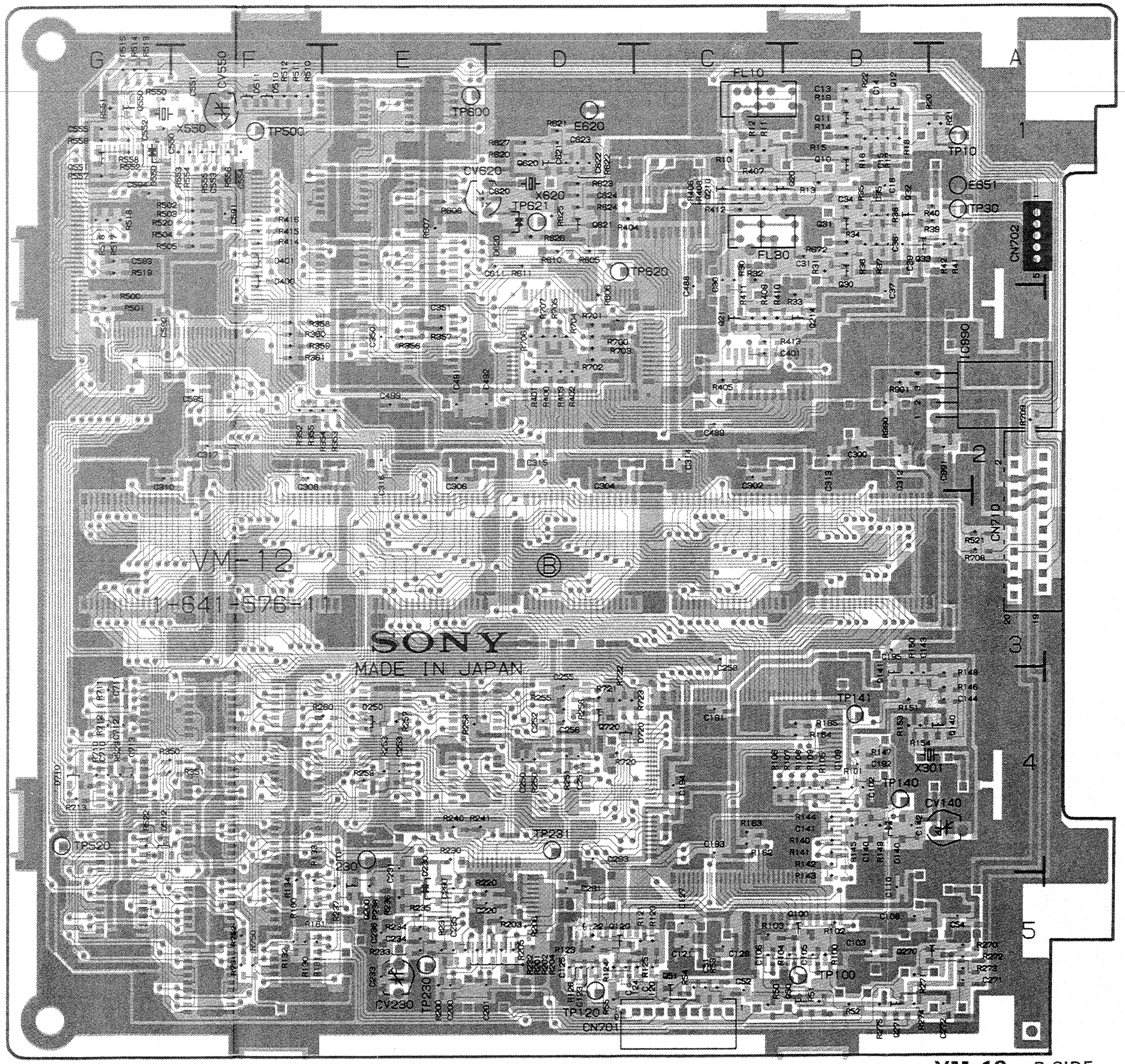
CN701	C-5
CN702	A-1
CN710	A-3
CV140	A-4
CV230	E-5
CV550	F-1
D140	B-4 *
D230	E-5 *
D250	E-4 *
D400	F-1 *
D401	F-1 *
D510	F-1 *
D511	F-1 *
D512	G-4 *
D710	G-4 *
D720	C-4 *
E230	E-4
E620	D-1
E651	A-1
FL10	C-1
FL30	C-1
IC100	B-5
IC120	D-5
IC130	F-5
IC131	F-5
IC160	C-4
IC161	F-4
IC200	E-4
IC250	D-4
IC251	D-4
IC252	E-4
IC253	E-4
IC254	D-4
IC255	D-4
IC256	E-4
IC257	E-4
IC300	B-3
IC301	C-3
IC302	D-3
IC303	E-3
IC304	F-3
IC305	G-3
IC352	E-2
IC353	E-2
IC354	F-2
IC400	D-2
IC420	C-1
IC440	C-2
IC500	F-1
IC710	G-4
IC711	G-4
IC750	G-5
IC751	G-5
IC752	G-5
IC753	G-4
IC754	G-4
IC990	B-2

Q10	B-1 *
Q11	B-1 *
Q12	B-1 *
Q20	B-1 *
Q21	C-2 *
Q30	B-2 *
Q31	B-1 *
Q32	B-1 *
Q33	B-1 *
Q50	B-5 *
Q51	C-5 *
Q100	B-5 *
Q120	D-5 *
Q140	A-4 *
Q141	B-4 *
Q200	E-5 *
Q210	C-1 *
Q214	B-2 *
Q270	B-5 *
Q271	B-5 *
Q550	G-1 *
Q551	G-1 *
Q720	D-4 *
TP10	A-1
TP30	A-1
TP100	B-5
TP120	D-5
TP140	B-4
TP141	B-4
TP230	E-5
TP231	D-4
TP500	F-1
TP520	G-4
TP600	D-1
TP620	C-1
TP621	D-1
X301	A-3
X550	G-1

* mark ; B SIDE mount


A
B
C
D
E
F
G
1
2
3
4
5
VM-12
1-641-576-11
IC301
IC302
IC303
IC304
IC305
IC400
IC500
IC200
IC150
SONY
MADE IN JAPAN
LOT No
S No

VM-12 A SIDE
1-641-576-11 (1)
SVO-9500MD

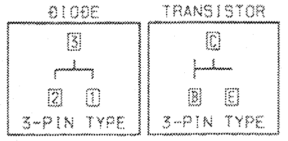

G
F
E
D
C
B
A
1
2
3
4
5
VM-12
1-641-576-11
SONY
MADE IN JAPAN
B
FL10
FL30
CN702
CN710
CN701
IC990
TP10
TP30
TP500
TP520
TP600
TP620
TP621
TP100
TP120
TP140
TP141
TP230
TP231
E620
E651
CV550
CV620
CV140
CV230
X550
X620
X301

VM-12 — B SIDE

1-641-576-11 (1)

SVO-9500MD

SURFACE MOUNT TYPE
DIODE/TRANSISTOR PIN LAYOUTS


DIODE
3
2
1
3-PIN TYPE
TRANSISTOR
C
B
E
3-PIN TYPE

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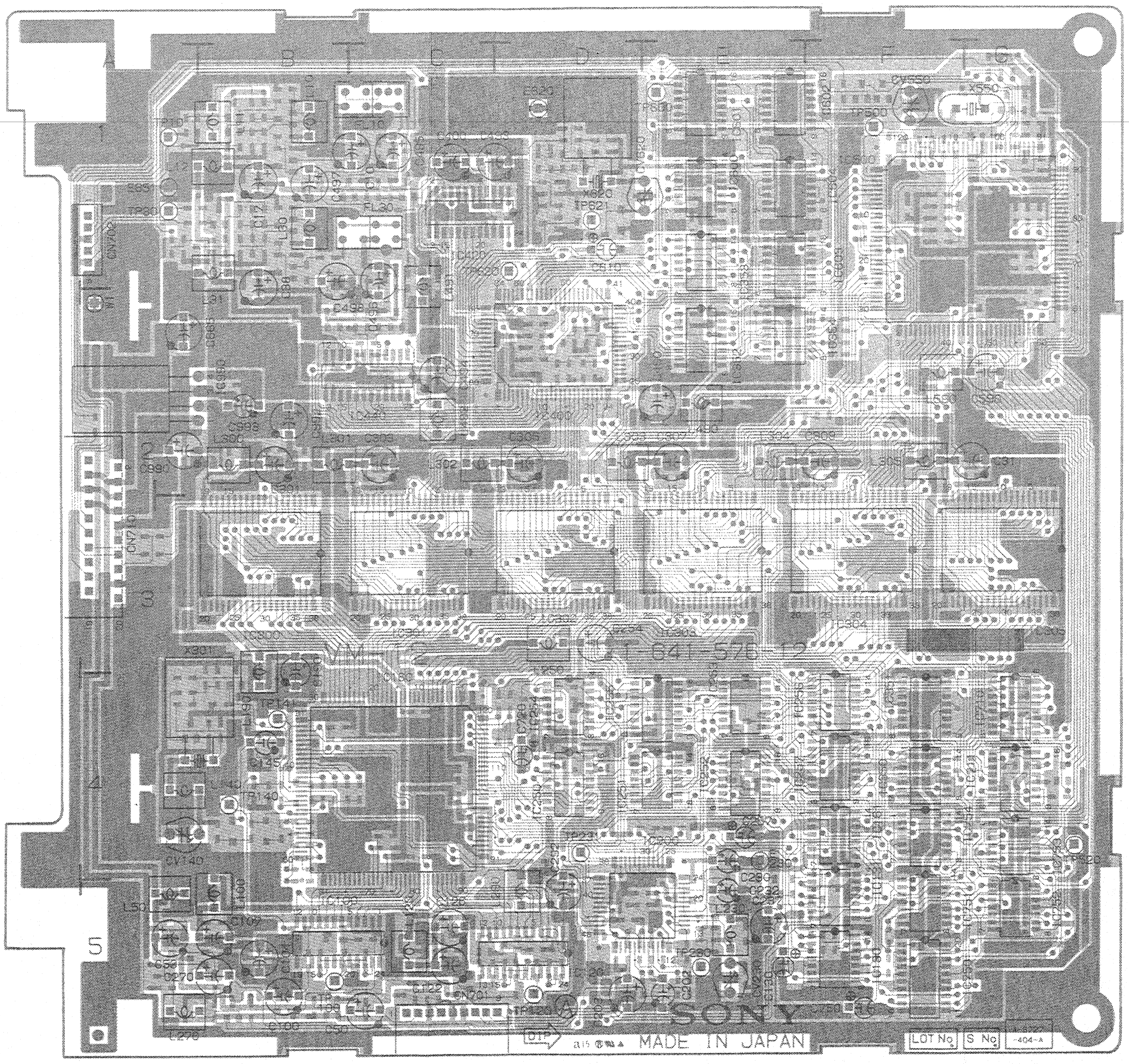
VM-12 ; Y/CHROMA NOISE REDUCER, VIDEO MEMORY, CHROMA DECODER/ENCODER

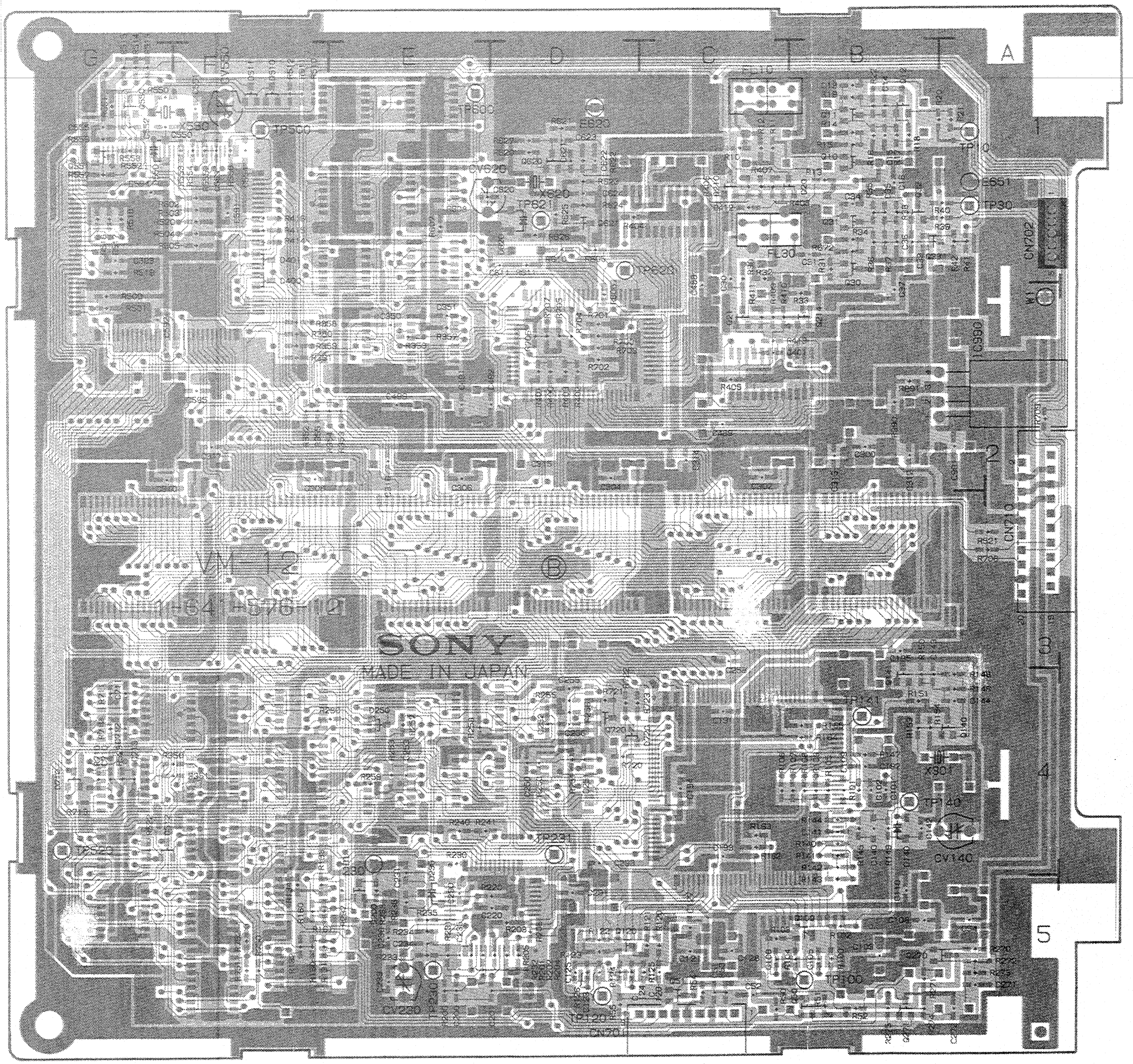
SVO-9500MD (UC) : Serial No. 20001 to 21200
SVO-9500MD4 (UC) : Serial No. 10001 to 12200

VM-12 (1-641-576-12)

CN701	C-5	Q10	B-1 *
CN702	A-1	Q11	B-1 *
CN710	A-3	Q12	B-1 *
		Q20	B-1 *
CV140	A-4	Q21	C-2 *
CV230	E-5	Q30	B-2 *
CV550	F-1	Q31	B-1 *
		Q32	B-1 *
D140	B-4 *	Q33	B-1 *
D230	E-5 *	Q50	B-5 *
D250	E-4 *	Q51	C-5 *
D400	F-1 *	Q100	B-5 *
D401	F-1 *	Q120	D-5 *
D510	F-1 *	Q140	A-4 *
D511	F-1 *	Q141	B-4 *
D512	G-4 *	Q200	E-5 *
D710	G-4 *	Q210	C-1 *
D720	C-4 *	Q214	B-2 *
		Q270	B-5 *
E230	E-4	Q271	B-5 *
E620	D-1	Q550	G-1 *
E651	A-1	Q551	G-1 *
		Q720	D-4 *
FL10	C-1		
FL30	C-1	TP10	A-1
		TP30	A-1
IC100	B-5	TP100	B-5
IC120	D-5	TP120	D-5
IC130	F-5	TP140	B-4
IC131	F-5	TP141	B-4
IC160	C-4	TP230	E-5
IC161	F-4	TP231	D-4
IC200	E-4	TP500	F-1
IC250	D-4	TP520	G-4
IC251	D-4	TP600	D-1
IC252	E-4	TP620	C-1
IC253	E-4	TP621	D-1
IC254	D-4		
IC255	D-4	X301	A-3
IC256	E-4	X550	G-1
IC257	E-4		
IC300	B-3		
IC301	C-3	* mark ; B SIDE mount	
IC302	D-3		
IC303	E-3		
IC304	F-3		
IC305	G-3		
IC352	E-2		
IC353	E-2		
IC354	F-2		
IC400	D-2		
IC420	C-1		
IC440	C-2		
IC500	F-1		
IC710	G-4		
IC711	G-4		
IC750	G-5		
IC751	G-5		
IC752	G-5		
IC753	G-4		
IC754	G-4		
IC990	B-2		

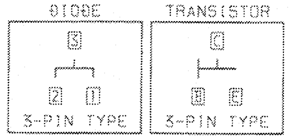


VM-12/P — A SIDE —
1-641-576-12 (1)
SVO-9500MD
SVO-9500MD4
SVO-9500MDP


G
H
F
E
D
C
B
A
1
2
3
4
5
VM-12
1-641-576-12
SONY
MADE IN JAPAN
TP500
TP600
TP620
TP621
CV620
X620
FL10
FL30
TP10
ES51
TP30
CN702
IC900
CN710
TP141
X301
TP140
CV140
TP100
TP120
CN20
TP230
CV230
TP231
TP520

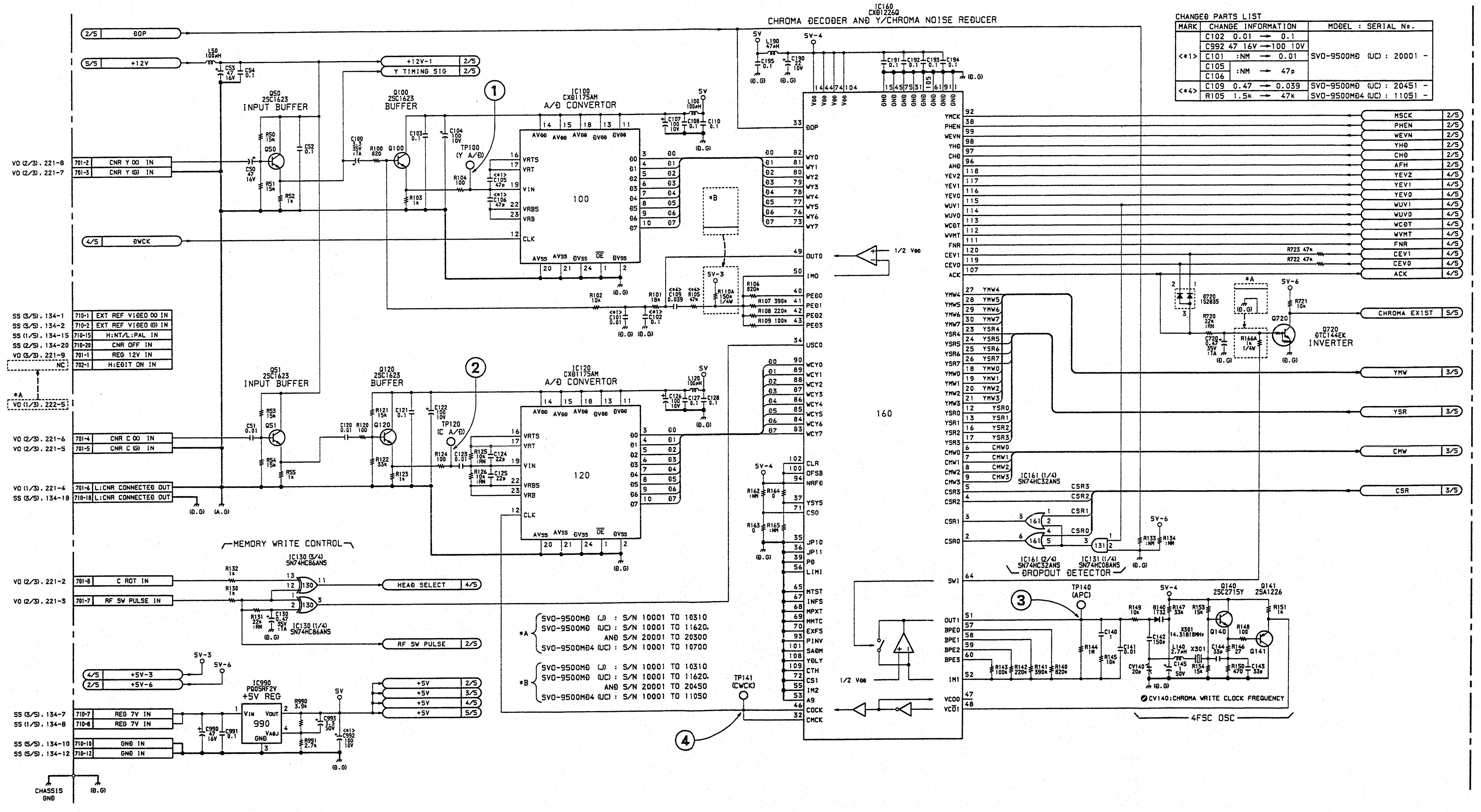
VM-12/P — **B SIDE** —
1-641-576-12 (1)
SVO-9500MD
SVO-9500MD4
SVO-9500MDP

SURFACE MOUNT TYPE
DIODE/TRANSISTOR PIN LAYOUTS


DIODE
TRANSISTOR
3
2
1
C
B
E
3-PIN TYPE
3-PIN TYPE

VM-12 (1/5); Y/CHROMA A-D CONVERTERS, Y/CHROMA NOISE REDUCER

SVO-9500MD (J) : Serial No. 10001 to 10310
SVO-9500MD (UC) : Serial No. 10001 to 11620, and 20001 to 21200
SVO-9500MD4 (UC) : Serial No. 10001 to 12200


2/5 ĐOP
5/5 +12V
+12V-1 2/5
Y TIMING SIG 2/5
L50 100μH
C53 47 16V
C54 0.1
Q50 2SC1623 INPUT BUFFER
Q100 2SC1623 BUFFER
IC100 CXD1175AM A/D CONVERTOR
TP100 (Y A/D)
①
②
③
④
VO (2/3). 221-8 701-2 CNR Y (X) IN
VO (2/3). 221-7 701-3 CNR Y (G) IN
4/5 ĐWCK
SS (3/5). 134-1 710-1 EXT REF VIDEO (X) IN
SS (3/5). 134-2 710-2 EXT REF VIDEO (G) IN
SS (1/5). 134-15 710-15 H:NT/L:PAL IN
SS (2/5). 134-20 710-20 CNR OFF IN
VO (3/3). 221-9 701-1 REG 12V IN
NC 702-1 H:EDIT ON IN
*A VO (1/3). 222-5
Q51 2SC1623 INPUT BUFFER
Q120 2SC1623 BUFFER
IC120 CXD1175AM A/D CONVERTOR
TP120 (C A/D)
VO (2/3). 221-6 701-4 CNR C (X) IN
VO (2/3). 221-5 701-5 CNR C (G) IN
VO (1/3). 221-4 701-6 L:CNR CONNECTED OUT
SS (3/5). 134-18 710-18 L:CNR CONNECTED OUT
(D.G) (A.G)
MEMORY WRITE CONTROL
IC130 (3/4) SN74HC86ANS
IC130 (1/4) SN74HC86ANS
VO (2/3). 221-2 701-8 C ROT IN
VO (2/3). 221-3 701-7 RF SW PULSE IN
HEAD SELECT 4/5
RF SW PULSE 2/5
4/5 +5V-3
2/5 +5V-6
IC990 PQ05RF2V +5V REG
+5V 2/5
+5V 3/5
+5V 4/5
+5V 5/5
SS (3/5). 134-7 710-7 REG 7V IN
SS (1/5). 134-8 710-8 REG 7V IN
SS (5/5). 134-10 710-10 GND IN
SS (5/5). 134-12 710-12 GND IN
CHASSIS GND
IC160 CXD1226Q CHROMA DECODER AND Y/CHROMA NOISE REDUCER
160
TP141 (CWCK)
MSCK 2/5
PHEN 2/5
WEVN 2/5
YHD 2/5
CHD 2/5
AFH 2/5
YEV2 4/5
YEV1 4/5
YEV0 4/5
WUV1 4/5
WUV0 4/5
WCDT 4/5
WVMT 4/5
FNR 4/5
CEV1 4/5
CEV0 4/5
ACK 4/5
Q720 DTC144EK INVERTER
CHROMA EXIST 5/5
YMW 3/5
YSR 3/5
CMW 3/5
CSR 3/5
IC161 (1/4) SN74HC32ANS
IC161 (2/4) SN74HC32ANS
IC131 (1/4) SN74HC08ANS
DROPOUT DETECTOR
TP140 (APC)
Q140 2SC2715Y
Q141 2SA1226
CV140:CHROMA WRITE CLOCK FREQUENCY
4FSC OSC

CHANGED PARTS LIST

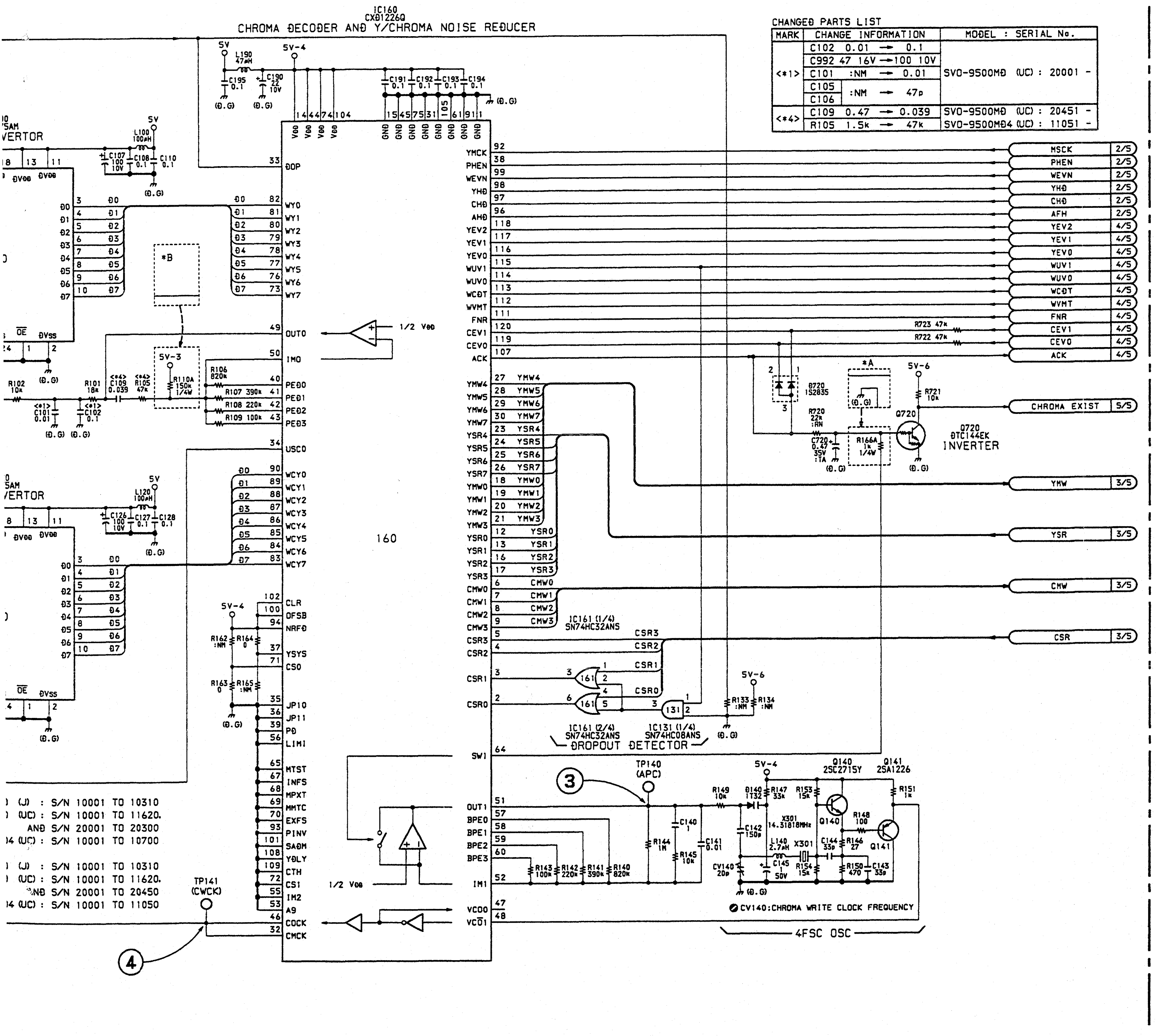
MARK	CHANGE INFORMATION		MODEL : SERIAL No.
<*1>	C102 0.01 → 0.1		SVO-9500MD (UC) : 20001 -
	C992 47 16V →100 10V		
	C101 :NM → 0.01		
	C105 C106	:NM → 47p	
<*4>	C109 0.47 → 0.039		SVO-9500MD (UC) : 20451 -
	R105 1.5k → 47k		SVO-9500MD4 (UC) : 11051 -

*A SVO-9500MD (J) : S/N 10001 TO 10310
SVO-9500MD (UC) : S/N 10001 TO 11620.
AND S/N 20001 TO 20300
SVO-9500MD4 (UC) : S/N 10001 TO 10700

*B SVO-9500MD (J) : S/N 10001 TO 10310
SVO-9500MD (UC) : S/N 10001 TO 11620.
AND S/N 20001 TO 20450
SVO-9500MD4 (UC) : S/N 10001 TO 11050

VM
1-641-5
SVO-95
SVO-95
SVO-95

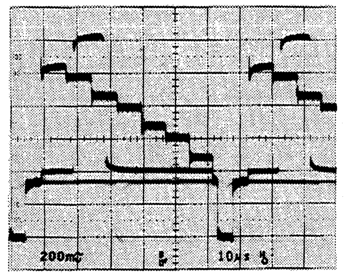
Board L


IC160
CX01226Q
CHROMA DECODER AND Y/CHROMA NOISE REDUCER
160
MSCK 2/5
PHEN 2/5
WEVN 2/5
YHD 2/5
CHD 2/5
AFH 2/5
YEV2 4/5
YEV1 4/5
YEV0 4/5
WUV1 4/5
WUV0 4/5
WCDT 4/5
WVMT 4/5
FNR 4/5
CEV1 4/5
CEV0 4/5
ACK 4/5
CHROMA EXIST 5/5
YMW 3/5
YSR 3/5
CMW 3/5
CSR 3/5
Q720
DTC144EK
INVERTER
IC161 (1/4)
SN74HC32ANS
IC161 (2/4)
SN74HC32ANS
IC131 (1/4)
SN74HC08ANS
DROPOUT DETECTOR
TP140
(APC)
TP141
(CWCK)
Q140
2SC2715Y
Q141
2SA1226
X301
14.31818MHz
CV140:CHROMA WRITE CLOCK FREQUENCY
4FSC OSC
③
④
(J) : S/N 10001 TO 10310
(UC) : S/N 10001 TO 11620.
AND S/N 20001 TO 20300
4 (UC) : S/N 10001 TO 10700
(J) : S/N 10001 TO 10310
(UC) : S/N 10001 TO 11620.
AND S/N 20001 TO 20450
4 (UC) : S/N 10001 TO 11050

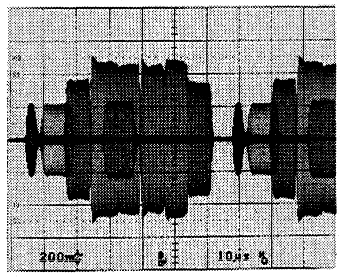
CHANGED PARTS LIST

MARK	CHANGE INFORMATION	MODEL : SERIAL No.
<*1>	C102 0.01 → 0.1	SVO-9500MD (UC) : 20001 -
	C992 47 16V → 100 10V	
	C101 :NM → 0.01	
	C105 C106 :NM → 47p	
<*4>	C109 0.47 → 0.039	SVO-9500MD (UC) : 20451 -
	R105 1.5k → 47k	SVO-9500MD4 (UC) : 11051 -

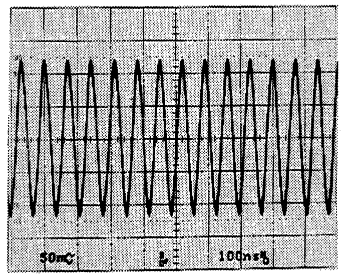
① TP100 (B-5) PB mode



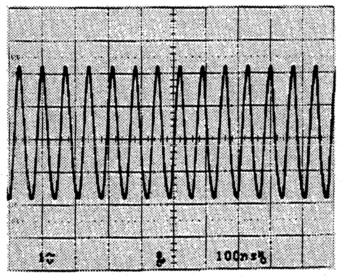
② TP120 (D-5) PB mode



③ TP140 (B-4)



④ TP141 (B-4)



Measurement Condition

PB mode: KRV-45HNS or KRV-51HN

VM-12 (1/5)

1-641-576-11, 12 (2)
SVO-9500MD (J) : # 10001-# 10310
SVO-9500MD (UC) : # 10001-# 11620, # 20001-# 21200
SVO-9500MD4 (UC) : # 10001-# 12200

Board Layout....Pages 13-34 or 13-36

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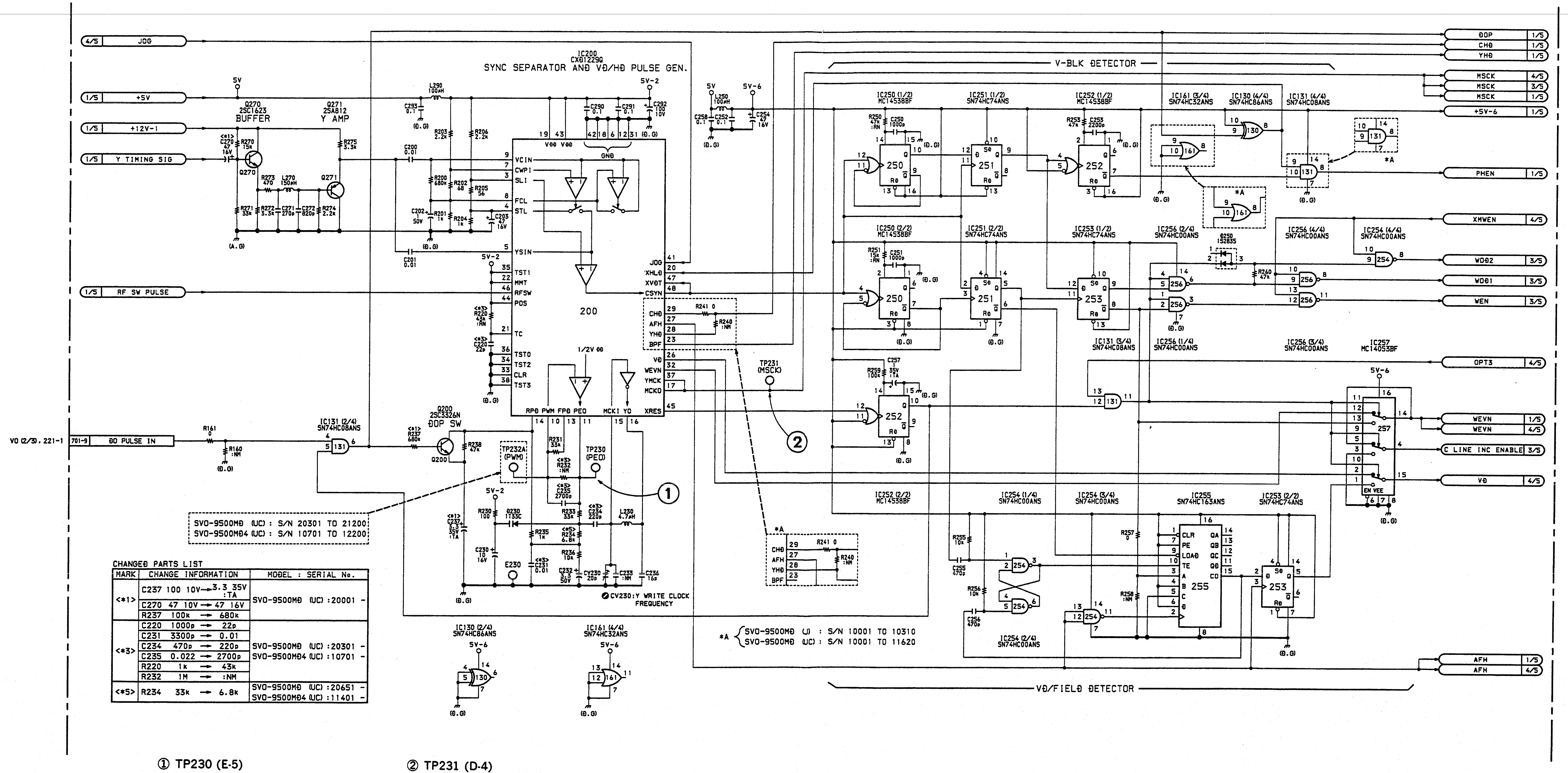
VM-12 (2/5); SYNC SEPARATOR, VD/HD PULSE GENERATOR

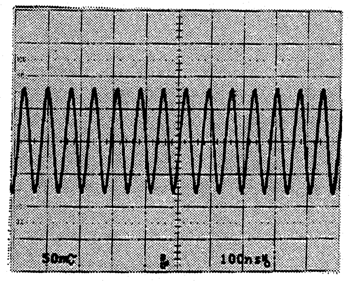
SVO-9500MD (J)	**: Serial No. 10001 to 10310**
SVO-9500MD (UC)	**: Serial No. 10001 to 11620, and 20001 to 21200**
SVO-9500MD4 (UC)	**: Serial No. 10001 to 12200**


IC200
CXD1229Q
SYNC SEPARATOR AND VD/HD PULSE GEN.
V-BLK DETECTOR
VD/FIELD DETECTOR
JOG
+5V
+12V-1
Y TIMING SIG
RF SW PULSE
VD (2/3). 221-1
OD PULSE IN
Q270 2SC1623 BUFFER
Q271 2SA812 Y AMP
Q200 2SC3326N DOP SW
IC131 (2/4) SN74HC08ANS
IC250 (1/2) MC14538BF
IC251 (1/2) SN74HC74ANS
IC252 (1/2) MC14538BF
IC161 (3/4) SN74HC32ANS
IC130 (4/4) SN74HC86ANS
IC131 (4/4) SN74HC08ANS
IC250 (2/2) MC14538BF
IC251 (2/2) SN74HC74ANS
IC253 (1/2) SN74HC74ANS
IC256 (2/4) SN74HC00ANS
IC256 (4/4) SN74HC00ANS
IC254 (4/4) SN74HC00ANS
IC131 (3/4) SN74HC08ANS
IC256 (1/4) SN74HC00ANS
IC256 (3/4) SN74HC00ANS
IC257 MC14053BF
IC252 (2/2) MC14538BF
IC254 (1/4) SN74HC00ANS
IC254 (3/4) SN74HC00ANS
IC255 SN74HC163ANS
IC253 (2/2) SN74HC74ANS
IC254 (2/4) SN74HC00ANS
IC130 (2/4) SN74HC86ANS
IC161 (4/4) SN74HC32ANS
D250 1S2835
TP231 (MSCK)
TP232A (PWM)
TP230 (PED)
CV230: Y WRITE CLOCK FREQUENCY
DOP
CHD
YHD
MSCK
+5V-6
PHEN
XMWEN
WDD2
WDD1
WEN
OPT3
WEVN
C LINE INC ENABLE
VD
AFH
SVO-9500MD (UC) : S/N 20301 TO 21200
SVO-9500MD4 (UC) : S/N 10701 TO 12200
*A SVO-9500MD (J) : S/N 10001 TO 10310
SVO-9500MD (UC) : S/N 10001 TO 11620
①
②
1
2
3
4
5
A
B
C
D
E
F
G
H

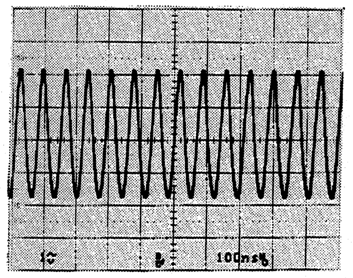
CHANGED PARTS LIST

MARK	CHANGE INFORMATION	MODEL : SERIAL No.
<*1>	C237 100 10V → 3.3 35V :TA	SVO-9500MD (UC) :20001 -
	C270 47 10V → 47 16V	
	R237 100k → 680k	
<*3>	C220 1000p → 22p	SVO-9500MD (UC) :20301 - SVO-9500MD4 (UC) :10701 -
	C231 3300p → 0.01	
	C234 470p → 220p	
	C235 0.022 → 2700p	
	R220 1k → 43k	
	R232 1M → :NM	
<*5>	R234 33k → 6.8k	SVO-9500MD (UC) :20651 - SVO-9500MD4 (UC) :11401 -

① TP230 (E-5)



② TP231 (D-4)



VM-12 (2/5)

1-641-576-11, 12 (2)
SVO-9500MD (J) : # 10001-# 10310
SVO-9500MD (UC) : # 10001-# 11620, # 20001-# 21200
SVO-9500MD4 (UC) : # 10001-# 12200

Board Layout....Pages 13-34 or 13-36